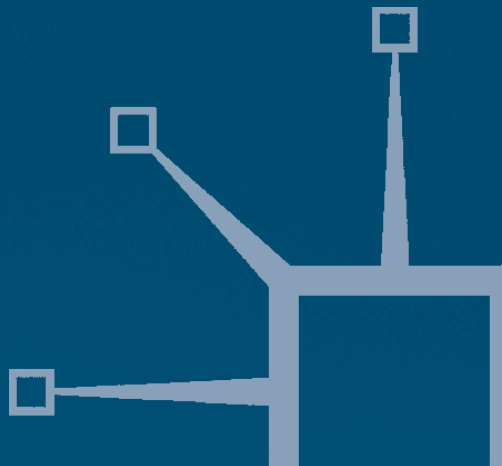


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Historical Materialism and Social Evolution

Edited by
Paul Blackledge and Graeme Kirkpatrick



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Edited by

Paul Blackledge

Senior Lecturer

School of Cultural Studies

Leeds Metropolitan University

and

Graeme Kirkpatrick

Lecturer in Sociology

University of Northumbria

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List of the Contributors

Ted Benton teaches sociology at the University of Essex.

Paul Blackledge teaches in the School of Cultural Studies at Leeds Metropolitan University.

Alex Callinicos teaches in the Department of Politics at the University of York.

Alan Carling teaches in the Department of Interdisciplinary Human Studies at the University of Bradford.

Graeme Kirkpatrick teaches in the Department of Sociology at the University of Northumbria.

Paul Nolan completed his Ph.D. at Birkbeck College, University of London.

Tony Smith teaches philosophy at Iowa State University.

Giusseppe Tassone teaches at the University of York.

1

Historical Materialism and Social Evolution

Paul Blackledge and Graeme Kirkpatrick

At the funeral oration for his lifelong collaborator, Engels famously compared Marx's achievements to those of Darwin: 'As Darwin discovered the law of evolution of organic nature, so Marx discovered the law of evolution of human history'. The contributors to this volume are united in seeking to investigate how these two theories actually relate. Whatever debates we may have concerning this issue one thing at least can be repeated with certainty; both Marx and Engels celebrated the publication of *Origin of Species* and greatly admired Darwin. Engels was the first of the pair to read Darwin's 'splendid book' and warmly recommended it to Marx for its repudiation of teleological theories of natural evolution. Once Marx caught up with Engels' reading he agreed that despite Darwin's 'crude English style' his book 'contains the basis in natural history for our view'. Interpretation of this line has divided Marxist opinion over the last century.

The politically dominant tendency within twentieth-century Marxism tended to reduce historical materialism to a crude form of social evolutionism. However, the more interesting theoretical developments of the last century were associated with 'Western Marxism', which, in reaction against the 'orthodoxy', totally eschewed any reference to Darwinian theory. With the demise of the Soviet Union and the effective dissolution of the mass Communist Parties of Europe as a whole, this polarisation within Marxist and critical thought has been largely overcome. One purpose of the current volume is to highlight the fact that many strands of contemporary critical theory now employ evolutionary concepts.

Given this, it must be acknowledged that crude evolutionary interpretations of Marxism have proved themselves to be both theoretically and politically crippling. For instance the Marxism of the Second International could not comprehend the maelstrom of barbarism to

which the bourgeois world turned in the twentieth-century and was unable to arm its cadres with a political theory capable of resisting this turn of events. So, ironically, on the basis of a social theory that predicted a future of the progressive realization of human freedom, the bulk of the Second International collapsed into national chauvinism in 1914. Even more insidiously, Stalinist interpreters of Marx spent much of the twentieth-century developing *a posteriori* justifications for the actions of the Soviet Union as the realization of historical progress.

Unfortunately, the main oppositional currents to the hegemonic evolutionary interpretation of historical materialism were either politically voluntaristic (for instance, Guevarra) or theoretically subjective and romantic (Western Marxism). For, while crude evolutionary Marxism is limited as a guide to action because it tends to reduce agency to objective historical processes, voluntarism tends to divorce its theory of action from the parameters imposed upon actors by history. So rather than overcome the flaws inherent in crude evolutionary Marxism's theory of history, voluntarist Marxism has instead tended to invert them. It is the contention of the contributors to this collection that, in rejecting any evolutionary contribution to historical materialism, voluntarist and Western Marxist schools have, in effect, thrown out the baby with the bathwater. We argue that the critical theory of society must be underpinned by an evolutionary component. However, we stress that the revolutionary moment to Marx's theory cannot be reduced to this evolutionary element.

A major part of the enduring significance of Marxist thought lies in its discovery of the enormous fecundity of the evolutionary paradigm. Not the least of Marx's own achievements lies in his development of a conceptual framework within which the theory of history has determinate conditions of application, while political activity is constrained and informed by a rational conception of the historical whole. The contributors to this volume attempt to develop this framework in a number of directions.

Paul Blackledge opens the volume with a review of the history of the relationship of Marxism to Darwinism. Focusing on Marx and Engels' reception of Darwin's theory of evolution he shows how the founders of historical materialism incorporated insights from Darwinism to bolster their own theory of history. Unfortunately, Marx and Engels left an ambiguous legacy that prefigured the debates within the Marxist movement over the last century. At one extreme their theory of history could be interpreted as a crude mechanical model of social evolutionism, while at the other, certain of their formulations lent themselves to a voluntaristic theory of social transformations. In contrast to those variants

of Marxism that seek legitimation in these extreme formulations, Blackledge argues that the most interesting of the theoretical reactions to the collapse of the Second International was a dialectical approach that sought to synthesize the fatalistic and voluntaristic elements of the Marxist method into a vibrant interpretation of historical materialism. This variant of historical materialism, he suggests, evolved as a reaction to the quietism of the Second International, flourished in the brief pre-Stalinist heyday of the Comintern, and anchors a non-mechanical theory of revolutionary politics within an evolutionary account of human history.

In his chapter in this collection Ted Benton explores the interpenetration of scientific and political discourses in nineteenth-century Germany. Conservatives, liberals and socialists contested Darwin's legacy, each claiming that the evolutionary perspective justified their own attitudes in politics. Benton shows how the various ideological uses to which the concept of evolution by natural selection was put in late nineteenth-century Germany were related to, but not reducible to, prior indeterminacies in the science itself. He examines Haeckel's liberal nationalist utilisation of Darwinism to underpin biologically the liberal critique of Bismarck's 'Blood and Iron' policy. Beyond this he explores the way in which German socialists, especially Bebel, subverted Haeckel's science and used it to bolster the cases for socialism generally and women's liberation more specifically. Benton then shows how conservative critics reacted to this use of Haeckel's work, and how Haeckel, in turn, moved to the right as he sought to distance himself from the Marxist Darwinists in the SPD. Haeckel's liberalism then moved towards a theory of race that in no small way underpinned the pseudo-science of the Nazi era, while the socialists moved to make a more generally progressive interpretation of the social implication of Darwinism.

This progressive evolutionary theory of history has, over the course of the last century, increasingly been judged a failure. Indeed, it was precisely this that underpinned the general rejection of evolutionary interpretations of Marxism by most independent Marxists in the twentieth-century. In chapter 4 Paul Nolan seeks to challenge this anti-Darwinian bias. He argues that the role of culture in determining reproductive fitness means that natural selection applies to human groups. He aims to use this principle to underpin G.A. Cohen's 'development thesis', which states that the tendency for human productive forces to expand is the central explanatory principle of historical materialism. Nolan embeds the development thesis in one about reproductive fitness. This modification of Cohen's thesis seems to supplant the explanatory

primacy of production with the primacy of reproduction. But Nolan argues that it is the level of productive power previously attained that determines which productive strategy will be most effective from the point of view of guaranteeing improved rates of reproduction.

Alan Carling, in his essay seeks to turn some of the arguments of analytical Marxism against Cohen's interpretation of historical materialism. Alongside authors such as Chris Bertram, Richard Blackburn, and Paul Wetherly, Carling has seen the possibilities opened up for a defence of historical materialism by building an alliance with evolutionary theory. Carling, paralleling Nolan, develops the view that only a switch to a more emphatic use of the evolutionary metaphor can enable something like Cohen's version of the Marxist theory to overcome a number of intractable theoretical obstacles. In particular, Cohen's account of the tendency of the productive forces to develop regardless of the social structures prevailing at any given time is not persuasive. Given the importance of this thesis to historical materialism some alternative account of the tendency will need to be developed. Carling's proposal is that we understand the situation of two social formations with differing technological foundations in terms of competition for evolutionary advantage. His competitive primacy thesis maintains that the society with the superior productive forces will win out. By developing the concept of 'competitive primacy', Carling prioritises evolutionary explanation over more individualistic explanatory currents also associated with the analytical paradigm. Specifically, Carling develops an interpretation of the transition from feudalism to capitalism which builds upon the work of Robert Brenner, while avoiding the trap of voluntarism. Carling thus seeks to explain the transition by underpinning Brenner's account of it with an improved version of the orthodox primacy thesis.

Alex Callinicos welcomes the general thrust of Carling's project. He wants to contextualise accounts of social conflict within analyses of the systematic contradictions between historically specific forces and relations of production. Callinicos argues that Carling's argument marks a step forward from the position taken by those such as Ellen Wood who, in defending Brenner's model, collapse Marxism into voluntarism. However, Callinicos agrees with Wood's critique of Carling's analytical methodology. On the basis of this method Carling has argued that exploitation is essentially co-extensive with oppression and the domination of one group by another. Yet, Callinicos argues, this leads into precisely the kind of relativism in politics that Carling has avoided in his discussion of history. It is integral to Marxist explanation that class should remain the central explanatory category in any contemporary

theory of historical progress. This is not to suggest that Callinicos subscribes to a crude model of historical progress; he is keen to reject Wood's claims that the only alternative to Brenner's interpretation of Marxism is a teleological theory of progress.

Callinicos's goal then is to defend the viability of the traditional socialist political project as an expression of a potential that is created once the objective systematic contradictions within the capitalist mode of production have matured. Unfortunately, his optimism stands in stark contrast to the pessimism that has affected many Marxists over the last few decades. This pessimism bears more than a passing resemblance to Marxism associated with the Frankfurt School. This tradition is renowned for having broken with the progressivist problematic. Indeed, Adorno and Horkheimer's development of a largely negative conception of history, in which decline rather than progress is the dominant motif seems like the very antithesis of the idea of positive directionality. Nevertheless, recent developments within this tradition have also seen use being made of the evolutionary analogy. Thus in the work of Jurgen Habermas, evolutionary concepts are used quite explicitly to defend a notion of the fundamentally progressive character of modernity.

In Graeme Kirkpatrick's contribution to the volume he suggests an interpretation of the growth of information communications technologies that builds upon Kunneman's discussion of Habermas's account of the nature of science and technology. Habermas's recent work develops a complex model of social evolution which involves the antagonistic relation of two aspects of modern societies: the system and the life-world. Although the critical force of his theory relies upon opposing the cultural and the meaningful to the systematised and routinised, Habermas's theory has been interpreted as essentially unstinting in its defence of an orthodox Enlightenment conception of progress. In recent times this interpretation has made him a target for postmodernists, environmentalists and others who see one of the primary functions of a modern sociology as understanding and explaining the growth of new social movements. In contrast to these interlocutors Kirkpatrick argues that Habermas's model is sufficiently flexible to underpin a critical account of the subversion of the originally democratic aims of the early hacker PC-users into the strategic logic of the system. Moreover, Habermas's theory therefore offers sufficient critical resources with which to make the case for some kind of forum for the critical public and democratic scrutiny of technological developments.

Giusseppe Tassone in his chapter argues that Habermas's theory of social evolution is stymied by its formalism. Whereas previous

incarnations of Marxism and critical theory have engaged directly with contemporaneous social circumstances and traced the consequences of the latter for thought, Habermas faces reality armed with a merely formal account of the conditions of social emancipation in general. Habermas's notion of a free society as one in which fundamental differences are resolved through negotiation and debate rather than through coercion is, then, inadequate to the task of defining those areas of social life which ought to be prioritised as sources of intrinsic meaningfulness. This situation results in a loss of the utopian thrust of critical theory; although Habermas can account for modernity in terms of a progressive logic of development in history he cannot anticipate our next move. Rejecting the Gadamerian alternative to Habermas on meaning, which roots it in a conservative attitude to tradition, Tassone proposes a return to the priorities of the Marxist tradition in his exploration of the idea that the notion of technological progress might actually serve as a guide to action.

Drawing on Marcuse and Feenburg, Tassone argues that Habermas's attempt to locate technology within the ambit of a singular kind of social consciousness – the strategic–instrumental – is 'essentialist'. Following Marcuse, Tassone maintains that technology is not 'neutral' but develops within a social context. Similarly, value and meaning do not survive in a separate sphere outside the reach of technological developments, but are immanent within social processes. On the basis of these positions, Tassone calls not for injunctions on future scientific and technological developments but for a radical recontextualisation of technology, and for new technologies to be conceived in line with a radical, emancipatory political agenda.

Tony Smith's essay develops the political implications of the Marxist concept of social evolution for our own time. Smith concentrates on Marx's use of the evolutionary concept as a way of looking at capitalist societies in particular, rather than at the longitudinal process of historical development. He demonstrates that, while social evolution is a complex and variegated affair, Marx's criteria for the evolutionary salience of any given phenomena remain well justified. Smith then applies these criteria to developments within the recent history of capitalist society, in particular the development of 'lean production'. His essay raises two questions: first, does lean production confirm or refute Marx's 'selection' mechanisms – his criteria for significance in social–evolutionary terms? Second, is the development of lean production consistent with a future socialism in the sense outlined by Marx?

While Smith's prognosis is not unremittingly optimistic, his argument sustains the view that the Marxist theoretical framework is a

strong contender in the explanatory field of contemporary social theories. Moreover, Smith's analysis confirms that the aspiration to socialism should and will remain a vital part of the political landscape in the twenty-first century. Smith's discussion of that landscape shows that evolutionary trends within capitalism have acted to further strengthen the objective basis for the transition to socialism. This point would be irrelevant to those who submit to one form or another of voluntaristic Marxism, for in this model the potential of agents to act in certain ways is abstracted from the material conditions within which they live. Conversely, crude evolutionary Marxists would regard such conditions as presaging an inevitable triumph for socialism. Neither of these positions is satisfactory. However, the evidence marshalled by Smith further opens up and deepens the possibility of a socialist alternative to capitalism, without in any sense guaranteeing the victory of that project.

The essays collected here testify to the enduring importance of the tradition of radical social theory associated with the name of Karl Marx, and to the fact that the possibility of a more emancipated form of social life still haunts capitalism. To move beyond this possibility to its realization would require a shift from theory to practice.

2

Historical Materialism: from Social Evolution to Revolutionary Politics¹

Paul Blackledge

Marx's admiration for Darwin has never been doubted, yet the relationship of historical materialism to Darwin's theory of evolution by natural selection has been an arena of continuing debate over the last century and more. In this essay I outline some of the main themes in this debate. I begin with a discussion of Darwin's theory, before outlining Marx and Engels' reception of that theory. Third, I discuss the relationship of historical materialism to social evolutionism, as it has been understood by some of the most important Marxists of the last one hundred years. I conclude that the most sophisticated and convincing interpretations of Marx's theory of history have been those that have refused to fall into the alternate traps of either crude evolutionism or voluntarism, but which have synthesized these two elements of Marx's thought into a materially grounded theory of revolutionary action.

Evolution

When Darwin published *Origin of Species* in 1859 the term 'evolution' had two distinct connotations. In the technical literature of biology it referred to the process whereby 'embryos grew from preformed homunculi in the egg or sperm'. This 'evolutionary' model was essentially static and could, of course, be squared with a belief in the role of God as the initial creator of the set of 'Russian dolls' with each of us packed neatly within one of our parents at the beginning of time. In contrast to this, its technical meaning, the concept of evolution was generally understood within popular literature to refer to a process of progressive development

(Gould 1977, 36). It was in this sense that 'the nineteenth century was a period in which rampant evolutionism became a general worldview' (Lewontin 2000, 46).

In Britain this ideology informed the sociology of Herbert Spencer, who, in 1857, wrote, 'from the earliest traceable cosmical changes down to the latest results of civilisation, we shall find that the transformation of the homogeneous into the heterogeneous, is that in which progress essentially consists' (Callinicos 1999, 101). Spencer's thought was essentially a social version of the natural evolutionary theory of Jean Lamarck, for whom characteristics acquired during an organism's lifetime could be inherited by its offspring and the basic dynamic of evolutionary change occurred independently within each individual unit in a collection. Lewontin suggests a similarity between Lamarckian evolution and the 'transformational' process by which stars follow parallel evolutionary trajectories over time (Lewontin 2000, 54). Similarly Sober calls Lamarckianism a 'developmental' type of evolutionary thought (Sober 1984, 148). Sober points out that Lamarck posited two evolutionary forces. First, he saw a progressive tendency over time for organisms to evolve to an increasing state of perfection. Accordingly, 'our lineage must be the oldest, since human beings are the "highest" living forms' (Sober 1984, 148). Lamarck's second force of evolution was that of circumstance. This allowed for a degree of local differentiation within and between species. Thus according to Lamarck's model, as each generation of giraffe strove to taste the highest leaves then they passed on their abilities to their young whose necks progressed towards an optimum length.

Gould points out that it was precisely because Darwin rejected both the progressivist and the static contemporary connotations that were attached to the concept of evolution within popular and biological discourse, that he only rarely used the term evolution, preferring instead the phrase 'descent with modification' (Gould 1977, 36). Indeed, in contrast to the progressivist schema, Darwin famously reminded himself, when referring to species, 'never to say higher or lower' (Sober 1984, 148).²

Darwin understood the system of selection to be a blind process, whereby imperceptibly small differences in reproductive success, both within and between species, would slowly result in the extinction of less successful variations and the proliferation of more successful adaptations. Lewontin categorises Darwin's theory as a 'variational' model of evolution (Lewontin 2000, 54). Taking up this nomenclature Sober notes, 'in contrast with Lamarckianism, there is no preordained ladder of life that living forms are inherently disposed to ascend' (Sober 1984, 154). In contrast to Lamarck's positing of a teleological process of

progress through history, Darwinian evolution rested upon an anti-teleological rejection of the idea of progress. However, while Darwin's method was anti-teleological it was able to explain, in Marx's words, the 'rational meaning' behind teleological explanations (McLellan 1977, 525). It could do so because natural selection and the other selectional processes that Darwin notes, while blind, do lead to adaptive transformations over time (Darwin 1968, 136 and 435; cf. Carling in this volume).

Since the publication of *Origin of Species* debate has raged over the exact interpretation of Darwin's model. In the Anglophone world this debate has recently centred on the precise nature of the relation between selection and adaptation and thus of the relationship between the concepts of selection and progress. Here a note of caution must be aired. No serious scientist accepts the naïve progressivist position, still probably the dominant popular understanding of Darwin's theory, which posits a linear development from less to more complex creatures, eventually producing humans as the apogee of the evolutionary process. This perspective strikes at the very heart of Darwin's anti-teleological thesis. The difference between the Darwinians, with respect to adaptation, appears in the first instance to be merely one of stress. Dennett, for instance, agrees with Maynard Smith that if the tape of history were rewound then, whatever else we could not predict, it would be a pretty safe bet that, for instance, eyes, of one sort or another, would evolve: 'Whatever lineages happened to survive would, according to standard neo-Darwinian theory, proceed to grope towards the Good Tricks in Design Space' (Dennett 1995, 306–7). Rose and Gould accept much of this argument, but stress that the materials with which the evolutionary process begins limit the parameters within which it can develop. So, while it may be true that eyes have evolved 'between forty and sixty times, independently from scratch' (Dawkins 1995, 78), this does not prove that any evolutionary trajectories are possible.

Rose argues that philosophers such as Dennett and biologists such as Dawkins hold what is in effect a strong adaptive theory, which lapses into a Panglossian celebration of the perfecting possibilities of selection (Rose 1997, 239). Rose's criticism has two points. First, he is keen to stress that the Panglossian adaptive approach leads to bad science. Gould develops this criticism in his reply to Dennett's assault on his own understanding of Darwin. Dennett, he argues, stresses adaptive selection to the detriment of any other processes and, as a consequence, is blinded to the evidence deployed by theorists such as Motoo Kimura, whose 'neutral theory of molecular evolution' is ignored because it is nonadaptive (Gould 2000, 92). So ultra and social Darwinists, Rose and

Gould maintain, tend to subvert the anti-teleological core of Darwinism and in effect reclaim Darwin for nineteenth-century model of evolution as progress. That is they recruit Darwin back to exactly the progressive model of evolution against which his model of 'descent with modification' marked such a radical break. Beyond the bad science, Rose notes that the Panglossian approach leads to bad politics. For, like Dr Pangloss, social Darwinists tend to assume that as we have evolved towards the best match for our environment we, therefore, live in the best *possible* world. It is this issue that most concerns us. For it is to the extent to which Marxism is a theory of social progress and the degree to which Marxists' conceive of the mechanisms of social progress to be similar to those of natural evolution, that we shall now turn.

Marx, Engels and Darwin

In 1980 Margaret Fay finally put to rest the myth that Marx sought to dedicate the first volume of *Capital* to Darwin (Wheen 1999, 368). However, that the myth had survived for the best part of a century and continues on today despite its refutation, is evidence of its plausibility, based on the admiration that both Marx and Engels undoubtedly shared for Darwin's 'epoch-making work' (Marx 1976, 461). But why should two men, whose primary aim in life was to understand, in order to overthrow, capitalism, be interested in biology? One obvious answer is that Darwin's model of natural selection undermines the naïve belief in the unchanging cosmos of the Bible. However, Marx and Engels' enthusiasm for Darwin's theory had a much more substantial basis than this. Marx argued, in a letter to Engels, that despite Darwin's 'crude English style' his book 'contains the basis in natural history for our view' (Foster 2000, 197). It is upon the interpretation of this line that a sea of ink has been spilled over the last century.

Marx's theory of revolution itself was related dialectically to his theory of social evolution, which itself grew out of and reacted back upon, natural evolution. The emergent relationship between cultural and biological evolution in Marxist theory was nowhere more eloquently expressed than in Engels' *The Part Played by Labour in the Transition from Ape to Man*. In this unfinished masterpiece Engels took issue with Darwin's interpretation of the evolution of modern humans. Darwin had argued that the decisive moment in the evolution of humanity occurred with the development of large brains, after which, he assumed, the other human characteristics of upright gait, free hands and language evolved. In contrast to this hypothesis, Engels suggested that it was the

upright gait that came first, after which massive brain development occurred: 'Climbing assigns different functions to the hands and the feet and when their mode of life involved locomotion on level ground, these apes gradually got out of the habit of using their hands [in walking] and adopted a more erect posture. This was the decisive step in the transition from ape to man' (Engels 1972, 251). Once the hands of our ape forefathers became free then they increasingly could be used to fashion tools. And once the evolutionary advantage had ceased to lie with hands that could be used for climbing and instead moved to hands that could work tools, then it was only a matter of time before the simian hand evolved into something resembling that of the modern human. This fact is of terrific importance because it shows that 'the hand is not only the organ of labour, it is also the product of labour' (Engels 1972, 252).³

This evolutionary adaptation had profound consequences. Engels notes that social man could have only evolved from a gregarious forebear. However, because 'labour necessarily helped to bring the members of society closer together... men... arrived at a point where they had something to say to each other' (Engels 1972, 253). Thus, labour reinforced any tendencies towards the evolution of social behaviour, up to and including the adaptation of the larynx, facilitating the development of language. Finally, labour and language together became the two most important stimuli of rapid brain expansion (Engels 1972, 255). Increased intelligence and technological know-how then led to the development of a more varied diet, which in turn underpinned further expansions of the brain, which were then the basis for the conquest of fire and the domestication of livestock (Engels 1972, 259). So, for Engels, the basis for social evolution was the evolution of an upright gait in our simian ancestors. Social and natural evolutionary processes from then onwards reinforced each other in a positive feedback loop to propel the evolution of ancestors forward towards modern humans. Engels argued that Darwin's inability to grasp this process was a consequence of the 'ideological influence' on his thought that demeaned the importance of labour to social history more generally (Engels 1972, 259). Gould points out that the fundamentals of Engels' case were shown to be correct with the discovery of *A. africanus* in the 1920s, but despite the evidence of the fossil record the alternative opinion has proved a long time dying (Gould 1980, 110). Despite Engels' dissatisfaction with Darwin's sequencing of human evolution both were agreed that natural and cultural evolutionary forces reacted back upon each other in the process of our evolution (Gould 1987, 110). At the centre of

Engels' interpretation of this process was tool use. Summarising this process Washburn and Moore have argued that 'tools maketh the man' (Foster 2000, 204).

This straightforward proposition sits perfectly well with the claim made by Marx and Engels in *The German Ideology* – written a decade and a half before the publication of *Origin of Species* – that 'men can be distinguished from animals by consciousness, by religion or anything else you like. They themselves begin to distinguish themselves from animals as soon as they begin to produce their means of subsistence, a step which is conditioned by their physical organisation' (Marx and Engels 1970, 42). If the evolution of the potential of social tool use in simians was that factor which underpinned the process of their evolution into modern humans, then human history in turn can be read (crudely) as a history of tool use, or in Marxist parlance as a history of modes of production. Thus Marx, in *Capital*, notes a modern parallel to Darwinian evolution: 'The manufacturing period simplifies, improves and multiplies the implements of labour by adapting them to the exclusive and special functions of each kind of worker' (Marx 1976, 461). Indeed, he goes on to argue that where Darwin had written a history of 'natural technology' a critical history of the evolution of human technology could be written, so long as we remember, with Vico, that 'human history differs from natural history in that we have made the former, but not the latter' (Marx 1976, 493). But how does this difference effect the relationship between Marx's theory of cultural evolution and Darwin's theory of natural evolution.

In Darwin's model, evolutionary change in the natural world is the product of the combination of variation between individuals, heredity, selection and the struggle for existence (Lewontin 1995, 149). In contrast to this selectional model of evolutionary causation, Callinicos has argued that Marxian social theory is an evolutionary philosophy in a developmental sense that is closer to Lamarckianism than it is to Darwinism (Callinicos 1999, 103). At the heart of this interpretation of Marxism lies Marx's famous preface to his *Contribution to the Critique of Political Economy*.

In the social production of their existence, men inevitably enter into definite relations, which are independent of their will, namely relations of production appropriate to a given stage in the development of their material forces of production. The totality of these relations of production constitutes the economic structure of society, the real foundations on which arises a legal and political superstructure and to

which correspond definite forms of social consciousness.... At a certain stage of development, the material productive forces of society come into conflict with the existing relations of production.... From forms of development of the productive forces these relations turn into their fetters. Then begins an era of social revolution. (Marx 1970, 20)

Perry Anderson has argued that for Marx it is this 'contradiction between forces of production and relations of production [that] is the deepest spring of long-term historical change' (Anderson 1980, 81). Most Marxists would agree that Marx understood his own thought in this way and yet the meaning of Marx's historical sketch has been open to varied interpretations over the last century and a half.

These competing interpretations of Marx's work, unfortunately, cannot be simply laid at the door of bourgeois misrepresentation of socialist thought. Marx himself, it must be said, produced an ambiguous legacy that clouded future interpretations of his work. Even in the *Communist Manifesto*, his open ended discussion of the competing possibilities for the future of humanity, of socialism or the 'common ruin of the contending classes', is marred by a more fatalistic claim that the bourgeoisie's 'fall and the victory of the proletariat are equally inevitable' (cited in Callinicos 1995, 152). This latter claim appears to legitimise a mechanically deterministic reading of Marx's view of historical progress. Similarly, Marx infamously wrote of English rule in India, 'whatever may have been the crimes of England, she was the unconscious tool of history in bringing about that revolution' (quoted in Callinicos 1995, 153). Here Marx appears at his most inhumane, celebrating progress as a process that operates against the agency of the oppressed.

However, Marx also wrote scathing attacks on English imperialism in India. In contrast to the seeming faith in a blind force of progress noted above, he argued that 'human progress... would not drink the nectar but from the skulls of the slain' (quoted in Callinicos 1995, 155). The stress here on the subjective experience of 'progress' is much closer to that deployed in *The Holy Family*: 'All progress of the spirit had so far been progress against the mass of mankind... [Socialists and communists] therefore declare "progress" to be an inadequate abstract phrase; they assumed a fundamental flaw in the civilised world; that is they submitted the real basis of contemporary society to incisive criticism' (McLellan 1977, 143).

Marx counted himself among the followers of those early socialists and as such was a firm critic of a reified concept of 'progress'. Indeed,

against any mechanical theory of historical progress, he insisted that 'history does *nothing*, it 'possesses *no* immense wealth', it 'wages *no* battles'. It is man, real living man who does all that, who possesses and fights, 'history' is not, as it were, a person apart, using man as a means to achieve *its own* aims; history is *nothing but* the activity of man pursuing his aims' (quoted in Rees 1998, 118). In contrast to the apparently deterministic formulations noted above, these lines suggest that Marx accepted a voluntarist theory of history.

Marx formally solved the contradiction between fatalism and voluntarism in *The Eighteenth Brumaire*. 'Men make their own history, but not of their own free will; not under circumstances they themselves have chosen but under the given and inherited circumstances with which they are directly confronted' (Marx 1973, 146). Unfortunately, this formal solution of the problem of the relationship between structure and agency did not preclude his followers from interpreting his thought in either fatalist or voluntarist ways. Perry Anderson has argued that historical materialism, after Marx, has swung between evolutionary and voluntarist theories of history (Anderson 1980, 101, 58). Up until 1914 the hegemonic reading of Marxism saw historical materialism as a mechanical theory of social evolutionary progress. This interpretation remained dominant under Stalin. As a reaction against the gross crudities of this interpretation a voluntarist reading of Marx arose, which denied any evolutionary basis to historical materialism. Between these two camps there has existed a minority dialectical interpretation of the relation between evolution and revolution in Marx's thought.

Crude evolutionary Marxism

Social Darwinists have, ever since the publication of *Origin of Species*, sought to utilise Darwinism to legitimise one form of politics or another (Hawkins 1997).⁴ However, the exact mechanism through which Darwin's theory of natural selection was given a social spin depended to a large degree on national cultures. America, as Hofstadter points out, 'was the Darwinian country' (Hofstadter 1955, 4). He explains the reception of social Darwinism in the American social sciences as a consequence of the deep conservatism of that society, to which Darwinian themes of the 'survival of the fittest' and 'struggle for existence' appealed (Hofstadter 1955, 6). However, precisely because of the hegemony of these ideas, American socialists defended their political beliefs in social Darwinian terms. As Pittenger argues, 'in such a cultural milieu, thoughtful laymen who inclined toward socialism could hardly

avoid addressing evolutionary ideas' (Pittenger 1993, 26). A similar story has been told of Victorian Britain, where a dominant conservative social Darwinism existed alongside a minority socialist social Darwinism (Jones 1980, 8, 63).

In stark contrast to the dominant Anglo-American conservative reading of Darwin, his ideas experienced a very different popular reception in Germany. Kelly argues that 'Darwinism became a kind of popular philosophy in Germany more than in any other country' (Kelly 1981, 5). This, however, was not the laissez-faire Darwin of the United States: 'German popular Darwinism was a continuation of the old enlightenment tradition. German Darwinism sought to crush superstition, to inform, to liberate and, indirectly, to democratise. In a more narrow sense popular Darwinism may profitably be viewed as a cultural extension of the radical democratic spirit of 1848 – a spirit that was suppressed in the political arena but could live on in less threatening non-political guises' (Kelly 1981, 7). As Benton argues, in the essay reproduced in this volume, Germany's academic establishment rejected Darwinism and, therefore, her most prestigious Darwinist, Ernst Haeckel, was compelled to take a chair at a provincial university. Haeckel's liberal social Darwinism therefore never attained the level of hegemony associated with similar views in Britain and America. Instead his ideas were taken up and radicalised inside Germany's socialist movement, which in turn infused German popular Darwinism with a much greater radical edge than was common elsewhere.⁵

The most important inheritors of the mantle of Marx and Engels were the socialists of the Second International. At the heart of this organisation was its German Section, whose leading theoretician was Karl Kautsky. Kautsky had come to Marxism via Darwinism: 'Marx and Engels ... had started out from Hegel; I started out from Darwin' (Kautsky 1988, 6). Indeed in the early days Kautsky understood his theory of history to be 'nothing other than the application of Darwinism to social development' (Salvadori 1979, 23). However, as Bronner argues, 'unlike Darwin ... [Kautsky] simply assumed that evolution involved progress' (Bronner 1990, 35). By the 1890s Kautsky became aware of his previous misreading of Darwin's system and suggested that Darwinism could not be equated with Marxism (Kelly 1981, 125). This did not lead him to drop his earlier evolutionary schema. Rather, he simply re-described his theory of history in Lamarckian terms (Kautsky 1988, 520).

Kautsky's Lamarckianism did not imply that he believed that social and natural evolutionary processes were identical. On the contrary he maintained that 'with man, ... there begins a new kind of evolution'

(Kautsky 1988, 522). Of central importance to the distinction between social and natural evolution was the fact that social evolution involved conscious human will, in a way that was foreclosed to natural evolution (Kautsky 1988, 523). He therefore tempered his evolutionism with the claim that 'each quality has its own laws, which hold good only for its domain, along with such laws as it shares with other qualities'. This position implied that 'laws of society can be arrived at only through studying society' (Kautsky 1988, 52).

Unfortunately, this insight did not lead Kautsky to break with mechanical forms of thinking. In the 1920s he argued that 'the advance and progress of the proletariat in capitalist society is irresistible It is inevitable that the process of economic development in the direction of socialism ... will end with the abolition of all classes' (Kautsky 1988, 410–11). This argument was simply a more extreme case of a position he had elaborated twenty years previously. In *The Road to Power*, he wrote that socialist revolution is 'irresistible because it is inevitable that the growing proletariat will defend itself against capitalist exploitation' (Kautsky 1996, 2). In this formulation Kautsky appears to suggest a less mechanical form of agency than that to which his thought would later evolve. Indeed in 1908 Kautsky criticized those for whom Marxism is a theory of "blindly governing" "automatic" economic development'. These thinkers, he argued, failed to understand the importance of 'human will' in history (Kautsky 1996, 21). However, his discussion of the operation of human will was itself mechanical. Actors could only influence events in the modern world through the medium of parties. However, the growth of parties was itself a consequence of a mechanical process. 'An independent labour party is bound to come sooner or later. And, once formed, such a party must have for its purpose the conquest of the government in the interest of the class which it represents. Economic development will lead naturally to the accomplishment of this purpose' (Kautsky 1910, 47).

Once formed, what was the role of the socialist party? Kautsky's answer begins with the claim that capitalism undermines the intellectual growth of the working class and consequently science is the preserve of 'bourgeois intellectuals' (Salvadori 1979, 77). It is the role of these intellectuals, when organised into socialist parties, to introduce socialism to the working class from without: 'The proletariat is incapable of creating on its own account a viable socialist theory. Such a theory has to be brought to it' (quoted in Geary 1987, 31). This was the account of the formation of socialist consciousness within the working class that Lenin took up in *What is to be Done?* (Geary 1987, 30).

Geary suggests that this proves that Kautsky's Marxism 'was less mechanistic than that of many of his critics' (Geary 1987, 30). But this is to misunderstand the nature of mechanical Marxism. That Kautsky's Marxism was complex and mediated did not prevent it from being mechanical, in fact it meant that it was doubly so. First capitalism, in a mechanical way, created both the objective conditions – the working class – and the subjective conditions – the socialist party – for socialism. Second the party mechanically introduced socialism into the consciousness of the working class. Socialist parties were therefore mechanically produced by history, they then mechanically acted on the working class, whose victory was consequentially inevitable. Thus, Kautsky famously claimed, 'the Social Democratic Party is a revolutionary party, but not a party that makes revolutions' (Kautsky 1996, 34). So for Kautsky the socialist revolution became a doubly mechanical moment in the process of social evolution. Kautsky's Russian counterpart, Plekhanov, developed a similar perspective, yet with a less gradualist spin.

Plekhanov came to Marxism through a reading of Hegel, not Darwin. Hegel's was an evolutionary system, however, unlike other nineteenth-century evolutionists Hegel was not a gradualist. This is the force of Plekhanov's critique of traditional models of social evolution: 'gradualness is interrupted, a leap takes place'. So while Plekhanov argues that it is the development of the forces of production that underpins social evolution, this process is far from gradual (Plekhanov 1962, 41). Social evolution is also for Plekhanov not a blind process. 'Political relations indubitably influence the economic movement' (Plekhanov 1962, 58). Indeed he went so far as to argue that if history was made by men 'it is manifest that it is also made by "great men"'. But how do great men make history? Plekhanov sought to model the processes through which 'the activities of such men are determined' (Plekhanov 1962, 70). His answer to this question paralleled Kautsky's discussion of the determination of free will. 'It has long been observed that great talents appear everywhere, whenever the social conditions favourable to their development exist. This means that every man of talent who actually appears, that is every man of talent who becomes a social force, is the product of social relations. Since this is the case, it is clear why talented people can change only individual features of events, but not their general trend; *they are themselves the product of this trend; were it not for that trend they would never have crossed the threshold that divides the potential from the real*' (Plekhanov 1940, 53). The target of Plekhanov's polemic was Russia's Narodniks, who aimed, through acts of individual terrorism, to overthrow Tsarism and institute some form of peasant socialism.

Against these Plekhanov intended to develop a materialist basis for revolutionary practice (Plekhanov 1940, 61). Despite this laudable goal Plekhanov's model of evolutionary social progress remained, like Kautsky's, a mechanical model of social change that was unable to break from the 'fatalism' that he criticized in others (Plekhanov 1956, 74): his 'concept of "leaps" is barren of any notion of a human subject' (Anderson 1995, 17).

If it is true that Plekhanov played down the sensuous human activity in Marx's method, then Stalin elevated this failing to the level of dogma. In his *Dialectical and Historical Materialism* Stalin wrote that 'first the productive forces of society change and develop and then, *depending* on these changes and *in conformity with them*, men's relations of production, their economic relations, change' (Stalin 1938, 45). It was as a reaction against crude schema such as this that many twentieth-century Marxists rejected evolutionary models of Marxism.

The voluntarist reaction

As we have seen there has been an evolution of evolutionary Marxism. In the hands of Plekhanov and to a lesser extent Kautsky, evolutionary thought represented a real vibrant attempt to comprehend human history, so as to underpin political practice. This living body of thought was then transformed into dogma under Stalin, for whom evolutionary Marxism became the dominant ideology of the Soviet ruling class. In response to this dogmatic degeneration of Marxism, Wright *et al.* argue, 'the cutting edge of twentieth-century Marxism [until the publication of Gerry Cohen's *Karl Marx's Theory of History*] ... has tended to oppose' evolutionary interpretations of Marx's thought (Wright *et al.* 1992, 14).

Perhaps Anton Pannekoek penned the earliest critique of the social Darwinian fatalism of the Second International. Pannekoek argued that humans and animals differed mainly in that people were social tool users, while animals interacted with the world, not through tools but through their organs. Natural selection, he concluded, operated on animals at the level of the organ, while in the case of humanity the social selection process operates, fundamentally, on tools (Pannekoek 1912, 50). So while humans and animals are distinct, 'the same principle' of evolution applies to both Darwinism and Marxism, albeit that the former refers to natural and the latter to social, processes. Indeed the Darwinian process of tool perfection will continue under socialism, well after the class struggle itself has ended (Pannekoek 1912, 58). Thus far Pannekoek's argument paralleled Kautsky's, however, he moved beyond

the 'Pope of Marxism' when he argued that, while the types of tools that we utilise evolve, this process only underpins the class struggle, it does not determine its outcome. Rather the class struggle is the struggle for the mastery of the tools that have been perfected by Darwinian processes in social history. 'The class struggle which is not a struggle with tools but for the possession of tools, a struggle for the right to direct industry, will be determined by the strength of class organisation' (Pannekoek 1912, 57).

Pannekoek suggested that social evolutionary processes would come to favour the forces of socialism. For as technology evolves, the developing 'concentration of capital undermines capital itself, for it diminishes the bourgeoisie whose interest it is to maintain capitalism and it increases the mass which seeks to abolish it' (Pannekoek 1912, 57). So, while Pannekoek maintained an evolutionary approach to the conceptualisation of the process of technical development, he did not mechanically draw political conclusions from this process. Rather he attempted to relate the objective process of technological evolution to the subjective process of class struggle and to break free from the tendency, characteristic of Second International thinkers, to reduce subjective processes to their objective determinants.

If Pannekoek signalled the possibility of a non-fatalistic, yet evolutionary social theory, the dominant reaction to the fatalism of the Second International was voluntaristic and was led by Gramsci, who, in 1917, famously celebrated the victory of the Bolsheviks as the *Revolution Against Capital*: 'the Bolsheviks reject Karl Marx ... they live Marxist thought'. This argument is normally read as the antithesis of Kautskian evolutionary thought, however, Gramsci also suggested, 'under normal conditions, the canons of Marxist historical criticism grasp reality, capture and clarify it' (Gramsci 1977, 34–5). It was just that Russia in 1917 was experiencing far from normal conditions: 'In Russia the war galvanised the people's will. As a result of the sufferings accumulated over three years, their will became as one overnight' (Gramsci 1977, 35). Thus, from the horror of war arose a revolutionary working class. A hope for a similar redemptive break with the barbarism of the present marked the thought of Walter Benjamin.

Benjamin famously wrote; 'nothing has corrupted the German working class so much as the notion that it was moving with the current' (Benjamin 1973, 250). This belief did have an understandable origin and an early utility, but this was soon lost.

In the time of the persecution by Bismarck [social Darwinism] helped to keep the party's self-confidence intact and its fighting spirit

unbroken. Later, in the epoch of revisionism, the evolutionary view of history laid increasing emphasis on development, in direct proportion to the party's growing reluctance to risk what had been achieved in the struggle against capitalism. History began to look deterministic; the triumph of the party was 'inevitable'. (Benjamin 1979, 369)

The 'vulgar Marxist' faith in the mechanical triumph of progress failed to understand that 'there is no document of civilisation that is not at the same time a document of barbarism' and thus that the naïve faith in progress was an 'illusion' (Benjamin 1973, 248; 1979, 370). In fact, the vulgar 'conception of progress ... did not adhere to reality but made dogmatic claims' (Benjamin 1973, 252). In contrast, Benjamin maintained, history was a 'single catastrophe which keeps piling wreckage upon wreckage'. Revolutions, in his view, could not evolve progressively from this nightmare, but must 'explode' onto the continuum of history (Benjamin 1973, 253). Thus against the evolutionary vision of Marxism as the science of social progress, Benjamin insists that Marxists should 'brush history against the grain': the revolution must thus be 'a tiger's leap into the past' (Benjamin 1973, 248, 253).

So both Gramsci and Benjamin attempted to outline a voluntarist rejection of evolutionary thought. However, while Gramsci's essay, written in 1917, is filled with revolutionary optimism, Benjamin's hope for a messianic liberation, written while fleeing the Nazi's in 1940, has a feel of desperation to it. Unfortunately, as the dreams of 1917 began to fade into the past, the dominant trend in Western Marxism followed Benjamin's pessimism, but without his messianic hope for redemption. This was most true of Adorno and Horkheimer who, writing after the Holocaust, shared Benjamin's critique of progress, but saw no basis for redemption. These two central thinkers of the Frankfurt School sought an answer to the question 'of why mankind, instead of entering into a truly human condition, is sinking into a new kind of barbarism?' (Adorno and Horkheimer 1979, xi). Their answer centred on the claim that 'the evolution of the machine has already turned into that of the machinery of domination'. Indeed, far from creating the basis for socialism, technological progress 'is irresistible regression' (Adorno and Horkheimer 1979, 35–6). A similar point was made by Marcuse, for whom technological progress had acted, contra Marx, to undermine, rather than to underpin, the potential for a socialist liberation from capitalism (Marcuse 1955, 437).

This analysis paralleled the deep pessimism of Adorno and Horkheimer. However, like Benjamin, Marcuse continued to hope for a 'chance' at a better world, brought into being not by the industrial proletariat but by

the outcasts in the core economies and the exploited races in the periphery (Marcuse 1968, 200). So, despite his generally pessimistic analysis of the contemporary conjuncture, Marcuse differentiated himself from the dominant position taken within the Frankfurt School by refusing to absolutise that pessimism. In a sense then the political conclusions to which he gravitated were similar to those taken by Sartre.

Where the Second World War had reinforced a form of deep political pessimism for the Marxists of the Frankfurt School, it acted to temper Sartre's revolutionary energies. Indeed, the collective experience of resistance to the Nazi's forged in Sartre a new revolutionary optimism. However, despite this difference from the Frankfurt School's political conclusions, he, like they, was a strong opponent of evolutionary Marxism: Plekhanov's 'Lamarckianism' was 'idiotic' (Sartre 1991, 218). In particular he laid some considerable blame for Marxism's contemporary political quietism on this evolutionary philosophy of history. In contrast to this redundant model Sartre's 'existentialism is a philosophy of sternest optimism, critical of the fear of freedom; a call to action and to revolution' (Dobson 1993, 45).

Sartre's sternest critics on the Left Bank were the structuralist Marxists around Louis Althusser. Interestingly, whatever other differences separated Althusser and Sartre both were united in rejecting evolutionary interpretations of Marxism (Althusser and Balibar 1970, 225). Unfortunately, Althusserianism proved itself to be an essentially static model of the social order and as such was vigorously criticized by Britain's foremost Marxist historian: Edward Thompson. Thompson vigorously campaigned for the reintroduction of the diachronic into historical analysis (Thompson 1978, 71). In rejecting Althusser's structuralism, Thompson did not proselytise for a return to an evolutionary view of Marxism. Rather, he insisted that while history 'affords evidence of necessary but never sufficient causes, the laws of social and economic development are continuously being broken into by contingencies in ways which would invalidate any rule in the experimental sciences' (Thompson 1978, 38). So, while Marxism had been 'infiltrated' by the vocabulary of evolution at the turn of the century, in the period 1936–46 the 'accent' of Marxism shifted in a voluntarist direction. And this was a development that suited Thompson's predilection towards real historical research over banal generalisation (Thompson 1978, 71–2). Unfortunately, the Cold War years had produced variations of a static structuralist ideology, both East and West. In part Thompson saw the New Left, of 1956, as a force that had aimed to break out of the confines of that dominant ideology. As against this movement Thompson

understood Althusserianism to be an ideological police action for the status quo (Thompson 1978, 131). Despite the rancour of Thompson's polemical defence of voluntarism against structuralism, both he and Althusser could agree that evolutionary Marxism was a fatally flawed system. The Italian Marxist Lucio Colletti shared this general anti-evolutionary perspective:

German Social Democracy chose the 'parliamentary road' at Erfurt, not because it had already abandoned the class conception of the State, but because its 'fatalistic' and 'providential' faith in the automatic progress of economic evolution gave it the certainty that its eventual rise to power would come about 'in a spontaneous, constant and irresistible way, quite tranquilly like a natural process'. (Colletti 1972, 105)

Perhaps fittingly, given Colletti's critique of the basis for the evolution of Kautsky's reformism, the most sophisticated voluntarist interpretation of Marxism to be formulated in recent years is that of the convinced revolutionary socialist Robert Brenner. Brenner rejects any suggestion of a transhistoric rationality that compels humanity to develop the forces of production. In his essay *Agrarian Class Structure and Economic Development in Pre-Industrial Europe* he argues that capitalism can best be understood to originate as an unintended consequence of the class struggle under feudalism. Summarising this process he writes,

the breakthrough from 'traditional economy' to relative self-sustaining economic development was predicated upon the emergence of a specific set of class or social-property relations in the countryside – that is, capitalist class relations. This outcome depended, in turn, upon the previous success of a two-sided process of class development and class conflict: on the one hand, the destruction of serfdom; on the other, the short-circuiting of the emerging predominance of small peasant property.

In France serfdom was destroyed by the class struggle between peasants and lords, but the process went beyond that needed for the development of capitalism, leading instead to the establishment of widespread small peasant property. In Eastern Europe the peasants were defeated, leading to the reintroduction of serfdom. Only in England did conditions evolve that were optimal for the evolution of agrarian capitalism (Brenner 1985, 30). Thus capitalist development in England and

as a corollary in Europe and the world, was not a consequence of a victory by the peasantry in the class struggle and still less the product of a rising bourgeoisie. Rather, capitalism evolved as an unintended outcome to the class struggle in the English countryside.

In defence of evolutionism

As the 1970s began the bulk of Europe's most influential Marxist thinkers were convinced that evolutionary Marxism was an untenable project. However, almost before the ink had dried on their papers, Sebastiano Timpanaro launched a defence of evolutionary Marxism as a critique of Colletti's interpretation of the failings of Second International Marxism. For Timpanaro

the real limitation of the Marxism of the Second International did not consist in a lack of voluntarism, but rather in a schematic and tenaciously Eurocentric 'philosophy of history', in a non-Marxist conception of the State, in an inadequate understanding of the imperialist phase of capitalism and in a persistent illusion that the bourgeoisie was already and would become increasingly a peace-loving and 'contented' bourgeoisie, precisely when it was getting ready for more ambitious militarist and reactionary adventures. (Timpanaro 1975, 120)

This political critique of the Second International underpinned Timpanaro's defence of Marx's model of social evolution as outlined in the 1859 preface to *The Contribution to the Critique of Political Economy*. However, if Timpanaro signalled the re-emergence of this document at the centre of the Marxist theory of history, it was Gerry Cohen who produced the most sophisticated defence of the same.

Cohen's evolutionary interpretation of Marxism is characterised by its analytically rigorous defence of two key propositions. First, 'the forces of production tend to develop throughout history (the developmental thesis)' and second, 'the nature of the production relations of a society is explained by the level of development of its productive forces (the primacy thesis)' (Cohen 2000, 134). This version of Marxism has something in common with Darwinian evolutionism, in that both offer a functionalist account of historical transformation.⁶ Beyond criticisms of the application of evolutionary models to cultural history (Elster 1980, 124–5), we note two problems with Cohen's method. First, in defending the proposition that the forces of production develop over time Cohen is committed to elaborating some cause for this. In this respect he assumes

that human agents will find it rational to develop those forces of production over time. 'Men are ... somewhat rational. The historical situation of men is one of scarcity. Men possess intelligence of a kind and degree which enables them to improve their situation' (Cohen 2000, 152). Thus Cohen commits himself to accepting what Wright *et al.* call a 'transhistorical' model of human rationality (Wright *et al.* 1992, 24). Moreover, Cohen is compelled to address a conjunctural political problem for his Marxism that did not exist for his nineteenth-century predecessors: his hypothesis appears to have been refuted by history, even before it was written. Thus the Russian and Chinese revolutions, among others, occurred on the basis of relatively low levels of the development of the forces of production, while Western Europe and America have, thus far at least, survived the socialist threat, despite having much higher levels of technological advancement. Unfortunately, Cohen never adequately deals with this problem for his Marxism (Cohen 2000, 206, 389–95).

Interestingly, Isaac Deutscher, in defending a similar Second International Marxist theory of history, found it necessary to drop the primacy of the forces of production precisely because he took the theoretical consequences of the Russian and Chinese Revolutions seriously. Deutscher generally agreed with Plekhanov's account of human agency. 'No great man is ... irreplaceable. Any historic trend, if it is deep and wide enough, expresses itself through a certain number of men, not only through a single individual' (Deutscher 1987, 243). However, events in China and Eastern Europe necessitated the revision of the interpretation of classical Marxism held by Plekhanov. 'In the classical Marxist scheme of things revolution was to occur when the productive forces of the old society had so outgrown its property relations as to burst the old social framework ... [this] conception of the revolution was thereby turned upside down' by the events of 1917 and 1945 (Deutscher 1987, 514). But with what were Marxists to replace this 'classical' model? Deutscher did not answer this question, but its form suggests that his thought would lend itself to a voluntarist interpretation of twentieth-century history. However, some, who have broadly accepted Deutscher's reading of twentieth-century politics, have instead sought to radicalise the evolutionary structure of Marx's theory of history by providing it with a more systematically Darwinian underpinning.

Thus, in the essay republished in this collection, Alan Carling has argued that Cohen's functional explanation of the primacy thesis is in fact an unacknowledged and untenable intentional explanation. Such an explanation is untenable, Carling argues, because the chaotic consequences of the attempts to construct a socialist state in Russia after 1917

show that it is 'beyond credence that any individual (or group of individuals) would ever be in a historical position to originate institutions of this kind'. Given the assumption that the Soviet experience was a failed socialist experiment, Carling moves to suggest a much more deterministic model of historical evolution than is to be found in Cohen. He labels his model as 'the competitive primacy of the forces of production'. In this framework competing social systems tend to prevail one over another according to the degree to which the forces of production have developed in each. Thus Western capitalism prevailed over Soviet Communism, proving itself to be better suited to existing environmental conditions. This type of model is given a deep quasi-Darwinian underpinning by Nolan, again in the essay republished in this collection, who argues that the cultural selection of greater productive techniques acts to aid the reproduction of people within each political or cultural unit, at the expense of those in less productive units.

Nolan and Carling therefore appear to deny the applicability of the concept of intentionality at the macro-historical level at which social structures are transformed. Ironically, given the vigour of Nolan's critique of Levine and Sober, this position coheres somewhat with the latter's interpretation of historical materialism. In opposition to Cohen's Marxism, Wright, Sober and Levine have attempted to defend what they call a weak restricted historical materialism (Wright *et al.* 1992, 97). Wright *et al.* argue that Darwinism and Marxism are historical theories in quite different ways. Darwinian evolution is, they suggest, 'historical in the same way that thermodynamics is' (Wright *et al.* 1992, 50). Marxism, in contrast, is a developmental theory in the Lamarckian sense (Wright *et al.* 1992, 58). However, they insist that Marxism is not a crude theory of social development. Wright *et al.* reject what they call Cohen's strong historical materialism. They claim that Cohen's Marxism provides an account of 'the necessary (material) conditions for change; the direction of change; the means through which change is achieved; [and] the sufficient conditions for change' (Wright *et al.* 1992, 89–90). Declaring a broad agreement with the first three of these conditions, Wright *et al.* merely reject the fourth condition in their weak historical materialism. In effect this amounts to their rejection of Second International notions of inevitability and irresistibility. This model thus implies an open ended and flexible approach to history. Unfortunately, Wright *et al.* also argue that Marxism has little to say regarding micro-history: it is a theory of 'trends and patterns of transformation ... too coarse grained to affect explanations of most particular events significantly' (Wright *et al.* 1992, 54–5). This criticism is misplaced. For while

it is true that Classical Marxism does not attempt to predict micro-historical events, it does attempt to shape them by relating the activity of individuals at a micro-level to broader evolutionary trends.

Synthesising evolution and revolution

Gramsci, as we have seen, celebrated the Russian Revolution as a manifestation of the victory of voluntarism over evolutionism. Despite this subjectivist bias of his early work, as his Marxism matured, he increasingly sought to integrate the subjective and objective moments of the historical process. As such his thought moved towards some sort of rapprochement with evolutionary Marxism. Whereas a mechanistic reading of agency had tainted previous versions of evolutionism, Gramsci continued to insist upon the centrality of the role of subjective agency within history. In contrast to Plekhanov's suggestion that history would have produced another Robespierre, had the original died before he was called to the centre of the historical stage, Gramsci, prefiguring the weak historical materialism of Wright *et al.*, insisted that an 'organic crisis' could continue on indefinitely if the agency required to overcome it did not appear.

A crisis occurs, sometimes lasting for decades. This exceptional duration means that incurable structural contradictions have revealed themselves (reached maturity) and that, despite this, the political forces which are struggling to conserve and defend the existing structure itself are making every effort to cure them. These ... efforts ... form the terrain of the conjunctural.... A common error...consists in an inability to find the correct relation between what is organic and what is conjunctural. This leads to presenting causes as immediately operative which in fact operate indirectly, or to asserting that the immediate causes are the only effective ones. In the first case there is an excess of 'economism', ... in the second, an excess of 'ideologism'. In the first case there is an overestimation of mechanical causes, in the second an exaggeration of the voluntarist and individual elements. (Gramsci 1971, 178)

The problem of the transcendence of the opposition between voluntarism and mechanical Marxism was at the centre of Gramsci's Marxism. He argued that while it is essential to map the organic terrain, both structural and conjunctural, upon which socialists organise, it is absurd to make purely objective predictions. 'Only to the extent to

which the objective aspect of prediction is linked to a programme does it acquire objectivity Reality is a product of human will to the society of things ... if one excludes all voluntarist elements ... one mutilates reality itself' (Gramsci 1971, 171). Indeed, 'in reality one can "scientifically" foresee only the struggle, but not the concrete moments of the struggle, which cannot but be the results of opposing forces in continuous movement, which are never reducible to fixed quantities since within them quantity is continually becoming quality' (Gramsci 1971, 438). If Gramsci therefore rejected Plekhanov's mechanical Marxism, he also rejected his estimation of the problem of great men in history. For the agency that Gramsci looked to, to act in the modern world, was not the great individual but the party. 'The protagonist of the new Prince could not in the modern epoch be an individual hero, but only a political party' (Gramsci 1971, 147). Gramsci's main political and theoretical efforts were therefore centred upon the building of a revolutionary party, the 'modern prince', that would be capable of rising to the challenge of the structural, organic crisis of Italian capitalism (Gramsci 1971, 169).

Paralleling Gramsci's contribution to Marxism, Lukacs, in his revolutionary period around the publication of *History and Class Consciousness*, argued that 'fatalism and voluntarism are only mutually contradictory to an undialectical and unhistorical mind' (Lukacs 1971, 4). Indeed, he suggested, contra to the mechanical Marxism of the Second International, 'it is not the primacy of economic motives in historical explanation that constitutes the decisive difference between Marxism and bourgeois thought, but the point of view of the totality' (Lukacs 1971, 27). Regarding the evolution of capitalist society, Lukacs argued, 'the blind power of the forces at work will only advance "automatically" to their goal of self-annihilation as long as the goal is not within reach'. Lukacs maintained that 'only the conscious will of the proletariat' could redirect these forces in a socialist direction (Lukacs 1971, 70). Unlike Kautsky and the early Lenin, Lukacs insists that this consciousness would not be received mechanically from Marxist teachers, but would evolve from the experiences of the working class itself. 'Consciousness does not lie outside the real process of history. It does not have to be introduced into the world by philosophers; therefore to gaze down arrogantly upon the petty struggles of the world and to despise them is indefensible' (Lukacs 1971, 77). Rather Marxists should engage in these struggles, become one with them and thus engage with and aid the process of the development of revolutionary consciousness. To overcome the problem of the stratified nature of the working class itself, the working class needs, Lukacs maintains, revolutionary political organisation.

Thus, the development of revolutionary class-consciousness coincides with the development of a revolutionary socialist party. However, it does so only if socialists have, like Lenin before 1917, built an organisation that workers could be won over to in the process of struggle. Lukacs stated this position most trenchantly in his defence of *History and Class Consciousness*. The purpose of that book was to 'demonstrate methodologically that the organisation and tactics of Bolshevism are the only possible consequence of Marxism' (Lukacs 2000, 47).

Both Gramsci and Lukacs had then, from Hegelian beginnings, come to Leninist conclusions. This trajectory is less strange than it first appears when it is remembered that Lenin argued 'it is impossible fully to understand Marx's *Capital* and especially its first chapter, without having studied and understood the whole of Hegel's *Logic*. Consequently, half a century later none of the Marxists understood Marx' (Lenin 1976, 180). Lenin himself attempted to overcome the gap between subjective and objective moments in the historical process through revolutionary practice. 'The activity of man, who has made an objective picture of the world for himself, *changes* external actuality, abolishes its determinates (= alters some sides or other, qualities of it), thus removes from it the features of Semblance, externality and nullity and makes it as being in and for itself (=objectively true) (Lenin 1976, 217–18). This passage appears to recall the stress on sensuous human practice of Marx's theses on Feuerbach. 'The chief defect of all hitherto existing materialism is that the thing, reality, sensuousness, is conceived only in the form of the object of contemplation, but not as sensuous human activity, practice' (Marx and Engels 1970, 121). As Dunayevskaya argues, for Lenin, in contrast to the socialists of the Second International, 'the masses... were not a "means" to reach an "end", socialism. Their self-activity is socialism' (Dunayevskaya 1988, 192). Trotsky shared Lenin's stress on socialist agency.

Trotsky, like Kautsky, had been greatly impressed by Darwin in his youth. 'Darwin stood for me like a mighty doorkeeper at the entrance to the temple of the universe. I was intoxicated by his minute, precise, conscientious and at the same time powerful, thought' (Pomper 1986, 46). Indeed, like Kautsky, Trotsky argued, 'Marxism is the application of Darwinism to human society' (Pomper 1986, 48). However, unlike Kautsky, but in a similar fashion to Plekhanov, Trotsky insisted that evolutionary change was a far from gradual process. 'There are long ages of relative equilibrium in the world of living things.... But there are also ages when the equilibrium between plants, animals and their geophysical environment is disrupted, epochs of geological crisis.... Darwinian

theory stands out above all as the theory of critical epochs in plant and animal development' (Pomper 1986, 48). Minute, slow quantitative changes could lead to explosive revolutionary qualitative changes (Pomper 1986, 113). Indeed, in a formulation that was very close to those used by Plekhanov, Trotsky wrote that 'the fundamental law of the dialectic is the conversion from quantity to quality, for it gives [us] the general formula for all evolutionary processes – of nature as well as of society' (Pomper 1986, 88). So, in as far as he studied Hegel, Trotsky appears not to have moved, as Molyneux rightly states, beyond the Marxism of the Second International (Molyneux 1981, 11).

However, through his study of concrete historical moments, Trotsky did move beyond Plekhanov's broad evolutionary schema. For instance, in stark contrast to Plekhanov's insistence that personalities could only affect the detail of historical processes, he maintained that individuals could play pivotal roles in history. Thus, Lenin entered a 'chain of objective historic forces' in the October 1917, but acted as a great link in that chain, whose function was to accelerate a learning process within the Bolshevik party at a moment when time was at a premium, such that without him the revolutionary opportunity could have been missed (Trotsky 1967, 310). Indeed, as Molyneux points out, it was as a politician that Trotsky most forcefully broke with mechanical materialism (Molyneux 1981, 11). Trotsky therefore, like Gramsci and Lukacs, linked the subjective and objective moments of the revolution through the mediation of the revolutionary party. However, he posed the issue of the mediating role of the party in much sharper manner than did they. For he took up Plekhanov's great man and, rather than replacing him with the party as did Lukacs and Gramsci, argued that the individual can only achieve greatness through the mediation of the party. It was thus only because Lenin had built the Bolshevik party up to 1917 that he was able to influence events in the Revolution (Pomper 1986, 20). More recently Harman has generalised this point; 'it was not the individual, but the party which became central for the non-mechanical, non-voluntaristic materialism of the revolutionary years after 1917.... The individual plays a role in history. But only insofar as the individual is part of the process by which a party enables the class to become conscious of itself' (Harman 1998, 48–51).

Conclusion

As we have seen, in the mid-nineteenth century, evolution had a technical meaning equivalent to stasis and a popular meaning equivalent to

progress. For these reasons Darwin was wary of categorising his theory of 'descent with modification' as an evolutionary theory. Today, however, the concept of evolution is synonymous with Darwinism, but is given a twist in the popular idiom because Darwinism is often assumed to be a teleological theory of progress. Thus evolutionary social theory is often equated with a teleological reading of Darwinism. It is not surprising then that evolutionary theories of history have, of late, found few admirers in the academy. In particular, evolutionary social theory has seen its star wane on the left as the claim of official Communism to the loyalty of Western socialists declined and prospects for a Western revolution went into reverse. In this context the most interesting Marxists have moved away from evolutionary theory. In this vein Anderson has criticized the application of Darwinism to social history. He argues that there do not exist social structures that can be reasonably related to the selection process operating in the natural world. For whereas genes mutate randomly and have no relation to the forces that select them, in the social world 'innovation belongs to the same plane as selection, ... both ... always involve the common material of conscious human agency' (Anderson 1992, 165). Thus, 'social [and natural] innovations ... are utterly different in both scale of the variation they represent and the speed of the changes they unleash' (Anderson 1992, 167). This is a compelling critique of Darwinian models of social evolution, but says nothing of the evolutionary claims of the various Marxist traditions noted above.

Almost all of the Marxist theories of evolution are not Darwinian, even when they believe that they are.⁷ Thus even Kautsky was forced to admit that his evolutionary social theory was Lamarckian. Unfortunately, Lamarckianism – a failed theory of natural evolution – is only slightly better as a guide to social progress. For Lamarckianism is a simple theory of progress by adaptation to a specific environment. Any crude application of this model to social history must, of necessity, underestimate the power of the forces of reaction. This is precisely what happened to Second International Marxists such as Kautsky, Plekhanov and more latterly Cohen, who, in their different ways, insisted that progress was inevitable and irresistible. Voluntarist Marxism grew as an understandable reaction to this model. Unfortunately, while the voluntarist models of Marxism are less obviously flawed than are the fatalistic models, they, nevertheless, have their own weaknesses. As Guy Bois has argued of Brenner's thesis, 'it amounts to a voluntarist vision of history in which the class struggle is divorced from all other objective contingencies and, in the first place, from such laws of development as may

be peculiar to a specific mode of production' (Bois 1985, 115). For this reason Brenner's Marxism appears to be indifferent to the way that the development of the forces of production create the parameters within which human agency operates (Harman 1998, 65–73).

If this is so, why then do the voluntarist historical models of those like Brenner seem so appealing? One answer must be that the evolutionary alternatives have tended to be so crude. As I have attempted to show, this need not be so: the dialectical tradition incorporates into its interpretation of Marxism an evolutionary element in the Lamarckian sense, but does not reduce its theory of history to this component.⁸ So where, for Lamarck, each succeeding generation of giraffe could 'agree' on the rationality of stretching the neck for food and thus underpin the process of neck elongation, for Marxists, different people have differing views on the direction that society should develop depending fundamentally on their class location, which in turn is the product of the previous development of the forces of production. The ensuing class conflict is, therefore, not only the product of competing interpretations of where society should go, but is more profoundly founded upon the existing point to which society has evolved. Because the fatalistic and voluntaristic interpretations of Marxism see only opposing sides to this social context neither is able to offer more than a partial understanding of history.

In contrast to both of these one-sided approaches, Marxist social theory requires a sophisticated evolutionary component to underpin its revolutionary political theory. For such a politics will be strengthened if it is constructed within parameters that are contextualised by the historical evolution of the forces of production. Moreover, through its incorporation of an evolutionary component Marxism is better able to ensure that history is understood to be 'more than just a series of particular and unique events, [but] reveals a certain directionality' (Sanderson 197, 94). Between these two scientific elements to historical materialism an art of socialist politics can be developed such that both the quietism of crude evolutionary Marxism and the substitutionism inherent to voluntarist versions of Marxism are avoided (Cliff 1986, 254). Moreover, the dialectical approach implies a positive research heuristic for historians, sociologists and political scientists that is free from idealism without collapsing into crude material determinism.

Notes

1. Thanks to Sebastian Budgen, Alan Carling, Matthew Caygill and Graeme Kirkpatrick for comments on this chapter in draft.

2. This did not prevent Darwin from introducing the concepts of higher and lower into his work in formulations that have contributed to the ambivalence of his legacy (cf. Dickens 2000, 12).
3. This formulation could be interpreted as evidence for Engels' supposed confusion of Darwinism and Lamarckianism (Weikart 1998, 72 and Benton in this volume). However, I do not think that Engels meant that culturally evolved characteristics could be inherited directly and certainly his argument need not be interpreted in that way (Foster 2000, 206; Gould 1987, 111). Rather he posits a dialectical relationship between cultural and natural evolution, whereby an important part of the 'natural' environment within which humans compete for survival is culturally constructed, such that cultural structures will act as part of the context within which natural selection takes place.
4. George Bernard Shaw suggested that Darwin 'had the luck to please everybody with an axe to grind' (Baumer 1977, 359).
5. Darwin himself commented that the connection made by many Germans 'between socialism and evolution by natural selection' was a 'foolish idea' (Weikart 1998, 1).
6. Cohen himself notes four possible mechanisms for his functional model, one of which is Darwinian (Cohen 2000, 285–9).
7. Even Nolan's 'Darwinian' Marxism is not evolutionary in the way that Anderson has criticized such thought.
8. I believe that the dialectical tradition could also incorporate a selectional evolutionary element and while I do not agree with all of the arguments articulated by Carling and Nolan, they have suggested some interesting mechanisms and historical examples, that might be cited as evidence in a rich synthesis of fatalism and voluntarism. In addition to their essays republished here see also Carling and Nolan 2000.

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Social Darwinism and Socialist Darwinism in Germany: 1860 to 1900

Ted Benton

Introduction

An influential tendency of thought¹ in Anglo-Saxon history and sociology of the sciences has argued for a recognition of the essential homogeneity of science and broader features of cultural life. Older traditions of historiography which devoted themselves to an understanding of the inner dynamic of a supposedly autonomous domain of scientific ideas have been abandoned in favour of an approach which sees in the very idea of an autonomous domain of conceptual movement an evasion of the issue of the ideological and political commitments and involvements of science. Science is itself a social practice, along with others. Why, then, should it be assumed that this social practice escapes the value-conflicts, the normative constraints, the political and ideological struggles which pervade and even constitute its social surrounds?

The case to be made out for this newer approach seems, at first sight, to be very strong. Consider, for example, the evident utility of the Darwinian idea of natural selection through a struggle for existence in the legitimization of laissez faire capitalism, as well as the justification of imperial domination of other races and cultures. Consider, conversely, Darwin's own recognition of the centrality of his reading of Malthus, bourgeois apologist par excellence, to the formation of his ideas on natural selection. The homogeneity of this piece of science, at least, with the leading ideas and social practices of bourgeois society in the latter part of the nineteenth-century seems undeniable. As Robert Young has argued, 'To sequester the social and political debate from the scientific one is to falsify the texture of the nineteenth-century debate and to mystify oppression in the form of science' (Young 1973, 344–438).

But the more closely we look at the fine texture of these debates and the social struggles with which they were interwoven, the more striking becomes the immense diversity of cross-cutting, conflicting and even contradictory readings of Darwinian and evolutionary doctrine and the comparable diversity of social and political uses to which these readings are put. This in itself tells against any straightforward identification of Darwinism with 'bourgeois' ideological imperatives.

The argument I wish to present, using some examples selected from the evolutionary debates which took place in Germany in the latter part of the nineteenth-century, is that the social and cultural, in short, ideological, uses of the idea of evolution can be made intelligible only on the basis of a prior understanding of the inner confusions, indeterminacies and conceptual conflicts of the scientific debate itself, but that neither the ideological uses to which evolutionary theory was put, nor the scientific debate, are reducible to one another. The scientific debate offers an indefinitely large number of conceptual possibilities for social and political appropriation. Which of those conceptual possibilities are in fact taken up, when they are taken up, the size and political orientation of the popular audience such appropriations reach and the transformations imposed on scientific ideas in the course of their appropriation, are questions which cannot be settled by reference to the dynamic of the scientific debate. Only an analysis of the configuration and flow of the conjunctures of social and political struggle can settle such questions as these. Nevertheless, the very availability, as conceptual possibilities, as cultural resources, of the scientific ideas and processes which are appropriated in the course of social and political struggles presupposes that the discrete histories of social and political struggle on the one hand, and of scientific innovation, on the other, are intertwined and interconnected.

The very diversity of the broader cultural and political uses of a single scientific idea, the very considerable chronological gaps which often separate the entry of a concept into scientific discourse and its cultural appropriation, the relatively well institutionalised normative seclusion of scientific debates from wider ideological struggles and so on are among the considerations which indicate the advisability of treating the scientific and the ideological as discrete, though interconnected historical formations. Since, though, I shall in this chapter be concerned with the results of the interconnectedness of science and the ideological struggles which use it as a resource, it is to the nature of the interconnections that I shall now turn.

Scientific investigation is, above all, a site of conceptual innovation. This, together with the immense popular authority of science, in

modern western countries in particular, gives to science a potentially subversive character. Science is potentially subversive in the sense that its innovations constitute an everpresent possibility of challenge to the established cultural formation of a society, and to its leading cultural authorities. But the very conceptual autonomy of science, and its frequently inaccessible technical language, both sustained by the institutional segregation of specialised scientific research, render any immediate or direct popular acquisition of scientific culture problematic, at the very least. The hierarchical social structure of the centres of learning and their linkages at the upper levels with the state and with business oligarchies render the appropriation of science to meet the technical and cultural requirements of conservative and established interests far more likely. The institutional forms taken by scientific research, in short, tend to obstruct the realization of whatever subversive potential may be possessed by science in its aspect as the centre of conceptual innovation.

Nevertheless, there are conditions under which radical popular movements are able to overcome the institutional and conceptual segregation of scientific discourse and under such conditions scientific ideas do, indeed, come to realize their subversive potential. In such an historical conjuncture ideologues of the status quo, too, will generally engage in battle for the cultural appropriation of the scientific ideas in question. The conditions under which scientific ideas may become popular cultural weapons are various. Sometimes it seems that a rigid and hierarchical structure in the centres of learning themselves proves impermeable to scientific innovations, whose promulgators may then be forced to search for an alternative audience. The new mechanics and astronomy of the sixteenth and seventeenth centuries, suppressed by the Church, the established cultural authority, sought alternative sponsors and an alternative audience among the merchants and artisans. Sometimes political events have radicalised elements in the scientific community themselves, inspiring them with a missionary zeal to set their scientific ideas to work in the improvement of social conditions and the advancement of popular enlightenment. Such seems to have been the character of the movement of the 'ideologues' (Rosen 1946; Temkin 1946a,b) in post-revolutionary France, and a similar mechanistic and materialist popular radicalism with its basis in scientific ideas followed the political upheavals of Europe in and after 1848. Popularisers such as Vogt, Moleschott and Buchner, as well as leading scientific innovators such as Virchow, Du Bois Reymond and Schwann were part of this mid-century movement in Germany (Gregory 1977a,b; Temkin 1977).

As we shall see, some of these figures were caught up not just in the scientific controversy generated by the reception of Darwin's *Origin of Species*² in Germany, but also in the widespread popular struggles which took place from 1860 onwards, in which the cultural and political implications of the new evolutionary ideas were contested. Undoubtedly some of the popularisers of Darwinism – Vogt, Buchner and, to some extent, Haeckel – were men who, in the wake of 1848, saw Darwinism as a way of revitalising their radical, secular and materialistic cultural movement whose significance had dwindled since the revolutionary defeats of the mid-century. Also, though, the rigid conservatism of especially the most prestigious German academic institutions, such as Berlin and Munich, rendered them impermeable to evolutionary and especially Darwinian ideas. The leading advocates of Darwinism were, like Haeckel, confined to less prestigious provincial universities, or found it necessary to earn a living altogether outside the university framework.

Both of these causes, combined with the rather direct and obvious pertinence of the content of Darwinian biology to some of the central questions of human existence and nature contributed to the immediacy with which Darwinian ideas achieved a popular diffusion in Germany after 1860. For all of these reasons, and probably others, almost every social and cultural conflict during the half-century or so after the introduction of Darwin's *Origin* to German readers saw contenders on each side calling the authority of Darwin in aid of their cause. Feminists and anti-feminists, revolutionaries and revisionists, socialists, liberals and conservatives, imperialists and internationalists: all, or almost all, seemed to find something in Darwinism and the idea of evolution which benefited their cases.

In part the purpose of this chapter is simply to illustrate some of this diversity in cultural uses of Darwinism. But in the course of the illustration I hope to show this very diversity of uses, this very cultural malleability of Darwinism is rooted in, first, a range of conceptual confusions, indeterminacies and controversies in evolutionary biology and, second, the special character of those 'mediating discourses' through which biological ideas were presented to popular audiences.

The diversity of evolutionary biology

I am prevented for reasons of space from giving anything like an adequate account of the shifting states of evolutionary biology in Germany during this period. In part the confusions, controversies and alignments

which constituted it were held in common with evolutionary biology elsewhere. In other respects, most notably in the legacy of German idealist philosophy in the biological thinking of especially the earlier decades of the century and, connectedly, in the presence of a viable, if minority, evolutionary tradition pre-dating Darwin, Germany was more-or-less peculiar.

Very schematically, I shall indicate six instances, or sources, of variability in theories of biological evolution. If we neglect, for the moment, the higher-level metaphysical and methodological impact of Darwin's *Origin*, its greatest innovation was undoubtedly the postulation of the mechanism of natural selection as, if not the only then the primary means, of organic change. But in Germany, partly because of the prior existence of an idealist-influenced tradition of evolutionary biology for which inner-organic directive or transformative forces were held to be the principal cause of organic transformation, the demarcation between Darwinist and non-Darwinist evolution came to centre on the question of inner-directive forces as against external, environmental causes of change. A rather miscellaneous and shifting assemblage of postulated environmental causes of both variation and selection came to be associated with Darwinism in the eyes of both its opponents and defenders. It was not until the end of the 1870s that the Darwinists themselves became more sharply divided as between those who favoured broadly Lamarckian conceptions of organic transformation through the inheritance of environmental adaptations and those who favoured the idea of selection from randomly occurring variations through the struggle for existence. The course of this debate, internal to Darwinism and the debate between the Darwinists and non-Darwinian evolutionists was, of course, greatly influenced by a second source of variability in evolutionary thought: the question of the postulated mechanism of biological inheritance. Here, evolutionists of all varieties had to account for the facts of generation by generation constancy in biological character, as well as the occurrence of variation and transformation. The 'blending' account of hereditary transmission was used from very early on to demonstrate the implausibility of the 'fixing' of newly arisen variations in freely interbreeding populations, which the Darwinian account required. This, in turn, was the source of a further controversy between Darwinian and non-Darwinian evolutionists over the character of evolutionary change itself: did the evolutionary mechanism work gradually upon small-scale individual variations, or were there moments in the history of organic life when sudden and large-scale transitions (comparable with insect or amphibian metamorphosis) had taken place?

Another difficulty in the theory of hereditary transmission which had to be faced by Darwinian evolutionists (in the broad sense of advocates of environmentally caused organic transformation) was to explain how modifications undergone by an individual organism in adaptation to its external conditions of life could be passed on to its descendants. Darwin's own hypothesis of pangenesis was only one among several attempts to deal with this problem which entered into the German evolutionary debates. Meanwhile experimental evidence against the inheritance of acquired characteristics as well as theoretical and cytological arguments against such postulated mechanisms as pangenesis were first of all seen to be damaging to Darwinism as such but, later on, underlay the increasing division among Darwinians between neo-Lamarckians and followers of Weismann's thesis of the separation of the germplasm. This latter thesis, of course, was part of a conception of inheritance which sustained the evolutionary mechanism of natural selection as against the various proposed mechanisms in which the environment was supposed to act directly on organic transformation.

Of course, the idea of selection in the struggle for existence was quite compatible with commitment to neo-Lamarckianism as, for example, augmenting its effects, ensuring that inheritable adaptations were more widely disseminated than would otherwise be the case. Haeckel, among others, adopted this general position. On the other hand, as the neo-Lamarckian idea of the inheritance of acquired characteristics lost ground, the notion of selection in the struggle for existence correspondingly acquired increasing importance as the only feasible alternative environmental cause of organic transformation.

But the concept of a struggle for existence in nature had, from Darwin's work onwards, been susceptible to more than one interpretation. In its broadest and loosest sense the 'struggle' for survival was waged by organisms against their inorganic conditions of life (for example, a plant in the desert) by one species against another (for example, prey against the predator), as well as between the different individuals of the same species. It was in this broad sense that Darwin used the phrase, postulating different degrees of intensity of struggle as between the different taxonomic levels – individual, variety and species. In the subsequent debate some biologists interpreted the idea of struggle in the sense closest to Malthus, as essentially a competition between individuals of the same species for means of subsistence. In this sense the idea of struggle for existence was most readily available for direct application in defence of economic and social *laissez faire*. In the wider sense, including struggle between varieties and species, the concept of struggle was

more readily available for direct application to various forms of racist political appropriation.

There was a further dispute amongst evolutionary biologists as to the form of the genealogy of current living beings. Were all to be supposed ultimately descended from a single original stock, which had become transformed and differentiated over an immense period of time to yield the current diversity of forms? Or, on the other hand, must one suppose that the existing diversity of type could only be explained in terms of a plurality of original forms? This latter 'polyphyletic' evolutionism represented a kind of compromise with Cuvierian 'type' theory in comparative anatomy, which had been a source of resistance to evolutionary theory. Since some polyphyletic evolutionists were prepared to go so far as to postulate separate genealogies for the distinct races of humankind, this variation in evolutionary theory, too, had a potentiality for cultural and political exploitation.

Finally, evolutionary biologists differed in their conceptions of the overall patterning of the evolutionary process. Some, most especially Haeckel, thought themselves able to discern such an overall direction. In Haeckel this is expressed in the form of two evolutionary laws – the law of specialisation, or division of labour and the law of progressive development. Darwin himself, and some of his German followers, resisted the idea of an overall development from 'lower' to 'higher' in evolutionary history, though Haeckel refers, with some justification, to Darwin as the source of his law of specialisation. In general, one might expect there to be a link between advocacy of inner directive forces as the evolutionary mechanism, on the one hand, and such a developmental, 'progressivist', account of evolutionary history.

Conversely, one might expect to find more open, conjunctural conceptions of evolutionary history among the Darwinist biologists committed to the contingencies of environmental causes as the principal transformative mechanism. In reality, the situation is more complex than this. Haeckel, for example, was very much an environmentalist, but, at the same time, advocated a closed, developmental view of evolutionary history, and connectedly, the parallelism of evolutionary and embryological development. Other Darwinists, such as Fritz Muller and August Weismann seem to have been somewhat more consistent in this respect, and it seems likely that in Haeckel's inconsistency we have an example of his prior ideological and political commitments imposing themselves on the shape of his biological thinking.

This, then, in extremely schematic outline, was the range of concepts, doctrines, controversies and indeterminacies whose complex unity

constituted evolutionary biology in the latter part of the nineteenth-century in Germany. It was this complex which provided both sides in a series of cultural and political struggles with some of their most potent ideological weapons. But, characteristically during this whole period in Germany, biological ideas were not simply plucked, one by one, from their scientific context and replanted in the selected ideological setting. A condition of possibility of these ideological borrowings seems to have been a quite distinctive form of discourse, which I have elsewhere called a 'mediating discourse' (Benton 1979). The form generally taken by such mediating discourses in Germany during this period was what might be called a scientific metaphysics. A philosophical world-view was constructed by generalising and abstracting from the leading doctrines of the special sciences, and unifying them under higher-level philosophical principles. Such world-views were promulgated by popularisers of scientific culture, some of whom, such as Haeckel himself, had considerable scientific standing in their own right and offered a means for individuals and social groups to identify themselves and others, in the universe, in history and in society. Bound up within a single system of ideas, then, were means of cognitive and practical orientation to the world, for ethical and political norms and values were always implicitly or explicitly present as supposedly scientifically founded inferences.

By far the widest initial impact of Darwinism in Germany consisted in its apparent bearing upon the credibility of such competing scientific metaphysics, and their principal antagonists, clerical and religious world-views and their institutional supports. Darwinism was heralded as dealing out a death-blow to supernatural and teleological explanation in science, and so extending and sustaining broadly materialist, mechanistic, naturalistic and secular world outlooks. Among such scientifically-based naturalistic world outlooks, those which advocated a specifically historical, developmental and, generally, 'progressive' conception of the universe and, by implication, human society, were immensely strengthened in coherence and scientific authority.

But, as we shall see, the integration of evolutionary biology with a historical view of human society and its prospects within the context of such a world-view was not without its problems. So far we have seen that evolutionary biology was not one thing, but many. Which version of evolutionary biology was adopted was bound to make a difference to the view of human reality and prospects which resulted. But, in addition to this, the conceptual means by which the selected version of evolutionary biology was integrated into the system of thought was also

bound to affect the character of the human and social perspective which resulted. To be more specific, these 'conceptual means' were the leading philosophical principles and fundamental orientations which constituted the mediating discourse in question. Since we are here concerned with scientific world-views, naturalism (the commitment to view human nature and society as belonging to the same world order as all other natural phenomena, to be studied by comparable means and in the same scientific spirit) was among the most important of these philosophical principles, or orientations.

But naturalism is itself not one thing. Varieties of naturalism can be distinguished and depending upon the form of naturalism adopted, one and the same set of biological doctrines could yield quite different social and historical prescriptions. First, it is important to distinguish reductionist from non-reductionist forms of naturalism. The attempted reduction of the social and human historical domain to the categories and laws of the biological and, in turn the biological to the chemical and so on, is not the only form of naturalism. For some naturalists the unity of the various domains of nature and ultimate methodological unity of the sciences could be sustained alongside the recognition of the conceptual specificity and diversity of the special sciences and their discrete domains in nature. Such non-reductionist naturalisms might rely on some notion of 'emergent' properties consequent on given levels of complexity of organisation of matter, or on some notion of higher levels of material organisation transforming the outcome of one and the same set of scientific laws. A great deal could, of course, depend upon precisely to what extent diversity of the domains of nature was allowable and how it was conceptualised.

A further distinction among varieties of naturalism is between what might be termed explanatory and normative naturalism. The commitment to naturalistic explanations of human origins, human variation and human historical transformation is clearly not the same thing as the commitment to view the outcomes of such natural processes as ethically legitimate, or even politically unchangeable. Nevertheless there was, especially among the evolutionists I shall discuss, a broad commitment to one or another form of normative naturalism in this sense. Sometimes, as with Engels (Marx and Engels 1965, 171–2), what at first sight appears to be a normative anti-naturalism turns out to be a special form of historical emergentist normative naturalism: one stage of human development is subjected to an ethical critique from the standpoint of a future, higher stage in that development, rather than from an altogether transcendent value-standpoint.

Nevertheless, the linkage of normative with explanatory naturalism was by no means universal. The beginning of the twentieth-century saw an increase in the influence of neo-Malthusian social doctrines which saw in Christian and humanitarian-inspired social reforms human interventions in the natural processes of struggle and selection which would lead to disastrous genetic deterioration of the race. Explanatory anti-naturalism (that is recognition of the autonomy of the social and its power to override the natural) was here combined with normative naturalism in the form of the advocacy of eugenic strategies which would restore or replicate the maintenance of the quality of the human stock by natural processes (Benton 1977, chapter six).

Finally, it should be remembered that throughout the latter part of the nineteenth-century in Germany the neo-Kantian revival, in its various forms, provided philosophical resources for widespread anti-naturalistic conceptions of human nature and prospects. Though not so widespread in their popular appeal, the diverse forms of neo-Kantian dualism had a strong intellectual presence and were regarded as a serious opposition by naturalistic scientific popularisers. The charge of philosophical dualism was, for example, laid at the door of Virchow by Haeckel in their debate on the cultural significance of evolutionism in the late 1870s.

Evolutionism in culture and politics

The 1850s in Germany had been a period of rapid economic, especially industrial, growth (Hamerow 1958, 1969; Holborn 1969). This entailed a growing economic and social importance for industrial capitalists, as well as a corresponding decline in the fortunes of the artisans, craftsmen and small merchants. Prussia, the most powerful of the German states, despite the industrial growth of the period, remained very much under the control of the class of conservative noble landowners, the Junkers and the monarchy. The industrial expansion, and the changing fortunes of the various social classes, had, however, lead to widespread popular allegiance to liberal ideas by the early 1860s. This was reflected in electoral majorities in the Prussian parliament in these years, and a constitutional conflict centred on the questions of control over the organisation and financing of the Prussian army, and foreign policy. Bismarck's militarist policy of 'blood and iron' was unpopular with liberals who nevertheless were unprepared to engage in the kind of popular mobilisation which would have been necessary for any serious opposition. The Austro-Prussian war of 1866 led to the formation of a

North German Confederation, dominated by Prussia, and increased the popular prestige of the army and so of Prussia's conservatives at the expense of the liberals. The liberals themselves were divided between those who persisted in their commitment to their earlier political objectives and those, especially in the new National Liberal Party, who were prepared to go along with Bismarck's foreign policy hoping thereby to gain concessions in the form of liberal economic reforms.

General liberalism had always been more nationalistic and authoritarian than the liberalism of the Western European nations, combining the aspirations for economic *laissez faire*, the rule of law and the separation of church and state with a commitment to national unification which was generally seen as realistically achievable only under the leadership of the authoritarian Prussian state. Already ideologically compromised, then, German liberalism, or, rather, a very substantial proportion of it, was prepared to further compromise with a conservative Prussian leadership which seemed to offer at least the prospect of national unification, if under what was, for the time being, an authoritarian and undemocratic political form. Moreover, Bismarck's government was itself sympathetic to the aims of economic liberalisation, since a firm economic and industrial base was required for Bismarck's foreign policies, and since concessions to the economic demands of the liberals were, quite rightly, calculated to offset liberal pressure for political reforms.

This realignment of German liberalism was consolidated with the victorious outcome of the Franco-Prussian war in 1870, whereupon the South German states were incorporated into the North German Confederation and Bismarck could claim to have achieved the long-standing objectives of the liberals: political unification of Germany. Bismarck was further able to rely on liberal collaboration in his *Kulturkampf* against the Catholic Church in the early 1870s. Pope Pius IX had denounced liberal principles in the 1860s and, in 1870, the doctrine of Papal infallibility was promulgated. Liberal hostility to the Catholic Church stemmed in part from this, but also from the implied supranational loyalties of the Catholics. Bismarck himself saw the Catholic minority in Germany as a potential political opposition and feared the involvement of the priesthood in German politics. In their turn, the Catholics revived their Centre Party in order to defend their position and this confirmed Bismarck's hostility.

Among those intellectuals who most readily endorsed Darwinism in the years after 1860 were several who had sympathised with the liberal nationalist cause in 1848. Carl Vogt, for example, had lost his university

post during this period. Buchner, who had also been active in 1848, as well as Vogt, had espoused radical materialist views during the 1850s, and both welcomed Darwin's work as a confirmation of their scientific materialism (Gregory 1977a,b). Also part of this radical, liberal and free-thinking current was Ernst Haeckel, the leading German Darwinian in the 1860s and 70s. But Haeckel was able to combine a high academic reputation with abilities as a populariser. Moreover, he did not hesitate to make plain what he saw as the moral and political implications of his scientific convictions.

Haeckel's popular writings of the 1860s and 70s effect, in the clearest way, an appropriation of evolutionary biology in the service of liberal politics and aspirations. Haeckel's integration of Darwin's *Origin*, with its advocacy of the distinctive mechanism of natural selection, into an evolutionary world-view which had much in common with the idealist nature-philosophies of the early decades of the century has already been mentioned. Haeckel himself, however, represented his world-view as an implication of scientific advances and as just as well founded on experience. Repeatedly Haeckel insists that among the most important of the implications of Darwinism is the proof of human descent from ape-like stock. This is not only a deductive consequence of the theory, but is confirmed by such facts as the striking resemblances between human and other vertebrate embryos in their early stages and between human and ape embryos until the very last stages of development. In the relative absence of fossil evidence, recapitulationism³ is an essential prop to Haeckel's advocacy of the Darwinian view of human ancestry. This, in turn, is used to devastating effect in deflating the hereditary principle in human affairs:

What are these nobles to think of the noble blood which flows in their privileged veins, when they learn that all human embryos, those of nobles as well as commoners, during the first two months of development, are scarcely distinguishable from the tailed embryos of dogs and other mammals? (Haeckel 1876, 295)

Also used to effect against the nobility and hereditary monarchy is Haeckel's treatment of heredity (Haeckel 1876, chapter 18). The hereditary principle in society is, Haeckel argues, justified by the assumption that special virtues, including mental virtues, can be passed on in a family from generation to generation. This is true, but experience shows that vices are more often passed on than virtues, and Haeckel rehearses the evidence that mental disorder is far more common in the aristocracy

and reigning families than it is among the common people. Haeckel's explanation for this is the one-sided education and unnatural separation from the rest of the population of these families, which encourages the darker side of human nature. This darker side is in turn passed on and intensified by heredity. Here, though, Haeckel hesitates to bite the hand that feeds him, contrasting the inherited enlightenment and liberalism of such princes as Saxon Thuringia, with the oppressive and militaristic character of other dynasties (presumably the Prussian).

Implicit then, in this anti-aristocratic use of his views on heredity, is Haeckel's commitment to the inheritance of acquired characters. In Haeckel's version of Darwinism, the inheritance of acquired characters was seen not as incompatible with, but rather as an aspect of the operation of, natural selection: organic modification occurred as a result of the interaction of adaptation (mutability), and heredity in the context of an intense struggle for existence. As I have argued elsewhere (Benton 1979), the importance of the retention of the inheritance of acquired characters in the biological account of organic transformation is that it makes possible a literal fusion of organic history and the social and cultural history of the human species. Thus, there is, generally in Haeckel no metaphorical, but a quite literal, application of his evolutionary theory to human society.

The struggle for existence, natural selection, and the evolutionary laws of specialisation (and division of labour) and progressive development all apply quite directly and literally to human society and history, just as to organic nature. In the *Natürliche Schöpfungsgeschichte* Haeckel quite explicitly adopts the Malthusian interpretation of Darwin's 'struggle for existence' and prefers the phrase 'competition for means of subsistence'. This in turn renders the ease of application of the idea of 'struggle' to human society complete and Haeckel is able to echo Malthus in extolling the improving effects of an intense competition in social and economic life. The more intense the competition among labourers of the same class, the more quickly are improvements and inventions made, and the higher becomes the perfection of the labourers. As in Britain, then, the idea of a struggle for existence in nature is used, deriving a moral from an explanatory naturalism, to extol the virtues of economic laissez faire.

But increasingly in human evolution natural selection perfects the brain. The struggle which has hitherto been carried on with weapons of murder will increasingly become an intellectual competition, the victory going to those men with the most perfect understanding. The transmission and augmentation of this perfection of the understanding

from generation to generation gives a just hope of human progress to the ultimate goal of freedom. The operation of sexual selection (which Haeckel treats as a species of natural selection), too, tends in the same direction: increasingly it is not bodily struggles, but rather aesthetic and intellectual charms and accomplishments which influence sexual choice, so that it is increasingly these qualities which will be inherited in future generations (Haeckel 1876, vol. 1, 268). Haeckel follows Darwin in supposing this must have been the main mechanism whereby the present distance between the human species and its ape-like ancestors was established. It also explains the supposedly great gulf separating civilised and savage men, a gulf which the inheritance of acquired characteristics allows Haeckel to see as simultaneously cultural and biological.

Haeckel's naturalism, in other respects unqualifiedly reductionist, here takes on an anti-reductionist appearance, though the naturalism itself remains unqualified. The laws of inorganic and organic nature, the laws of organic nature and human history are identical, but the form taken by the laws of organic nature become transformed in the course of human history, in such away that what can be recognized as cultural and intellectual progress and hence human freedom, can be represented as the outcome of the continued operation of these organic laws. Since, however, the struggle for existence in human society is increasingly a Malthusian or Lamarckian teleological process, in which human choices are the determining force Haeckel was, though, an advocate of determinism (as against free will), the distinction, crucial to the mechanistic interpretation of Darwinism, between natural and artificial selection in the human species must come into question. Haeckel, with dubious consistency, denounces as examples of a damaging artificial selection, both militarism, which consigns to an early death the most courageous and vigorous of German youth, and 'medical selection' which by prolonging the lives of those afflicted by inherited diseases allows them to be passed on to succeeding generations. Fortunately, however, such deleterious effects of artificial selection are outweighed by the overwhelmingly progressive effects of natural selection on the human species.

But not all artificial selection is condemned by Haeckel. Artificial selection in the form of the destruction of unfit or weakly children by Spartans and American Indians is praised, while capital punishment is advocated on the same grounds. Though Haeckel stops short of advocating a negative eugenics resembling that of the Spartans and 'Redskins' there is more than a hint of approval of it. More thoroughgoing eugenic

programmes, as is well-known, were a characteristic feature of later German social Darwinism (Gasman 1971; Zmarzlik 1972).

Finally, the evolutionary laws of specialisation, or division of labour, and of progressive development, so essential to Haeckel's biology, are also applied directly to human history. Specialisation and division of labour is to be found as an outcome of the struggle for existence between organisms and, within organisms, between cells and organs. It is also to be found in societies, so that a town may support more workmen who ply different trades, than if all compete in a few trades (Haeckel 1876, vol. 1, chapter 11). The existence of an overall pattern of progress in nature and society is also a consequence of the struggles for existence, though Haeckel has some difficulty in saying just what this progress consists in other than an increasing specialisation and division of labour. The nearest he gets to such a criterion is to supplement the process of specialisation and division with one of centralisation and subordination of parts.

Clearly then, Haeckel's explanatory and normative naturalism, together with his commitment to a specific constellation of biological doctrines (inheritance of acquired characteristics, struggle for existence as competition, laws of progressive development and specialisation and so on) enabled him to use concepts drawn from evolutionary biology to rationally sustain some of the leading liberal values and political aspirations of the 1860s and early 70s. There is the belief in progress as written into human history with the certainty of a natural law. This progress consists in a growing perfection of culture and the intellect, with human freedom as its direct consequence. Economic and intellectual competition are essential to this progress, and the hereditary principle in social life is an intellectually indefensible and practically obstructive institution. Militarism, too, is attacked, but with a less coherent biological rationale. The compromising side of German liberalism is also in evidence, though, not just in the prudent qualification of the condemnation of the hereditary principle, but also in the implicit authoritarianism of the flirtation with negative eugenics, and in the concessions to hierarchy and centralism in the account of 'progress'. Finally, in this respect, Haeckel, along with other social Darwinists, laid the intellectual foundations for a future colonialist foreign policy, in the early application of the idea of a struggle for existence – in this case, very much a bodily struggle – between the races (for Haeckel, species) of mankind (Haeckel 1883, 84 ff).

Finally, Haeckel's support for Bismarck's *Kulturkampf* against the Catholic Church in the early 1870s also acquires a rationale from

evolutionary biology. Haeckel's enthusiasm for Darwin was motivated not simply by Darwin's biological contribution, but perhaps even more by the methodological and metaphysical implications which Haeckel took evolution by natural selection to possess. In the great battle between 'mechanico-causal' and 'teleological' explanatory programmes, Darwinism was welcomed as displacing teleology from its stronghold in biology: unknown forces, whether Divine or impersonal, had no place in scientific explanation, and the idea of organic change as a result of natural selection in the struggle for existence made their abandonment possible, once and for all. Darwin's great methodological advance, then, has the further consequence of rendering both organic and inorganic nature subject to the same laws (though Haeckel concedes that a reduction of the phenomena of heredity and adaptation to physical and chemical processes is neither available, nor in foreseeable prospect) (Haeckel 1876, vol. 1, chapter 2). The incorporation of the human species into the same explanatory framework further renders human consciousness naturalistically explicable: the redundancy of explanation by supernatural forces in nature is complete.

But Haeckel hesitates to espouse materialism. Haeckel's naturalistic account of consciousness is not of the 'historical emergentist' type, but, rather, takes the option of representing mind as an elementary property of matter itself. Sometimes, Haeckel circumspectly refers to his mechanistic 'monism' as transcending both materialism and idealism (Haeckel 1906, 356), but elsewhere he is prepared to espouse 'materialism' so long as it is qualified by the adjective 'scientific' (Haeckel 1876, vol. 1, 35–6).

All of this provides Haeckel with rich material for the anti-clerical polemics which are scattered throughout his writings of the 1860s and which issued in his support for the *Kulturkampf*. First of all, the Church has always resisted, and used its power to obstruct and suppress the advance of the mechanico-causal programme over the teleological one. Again and again Haeckel refers to the 'Christian Inquisition' and the imprisonment of Galileo, to whom Darwin is commonly compared (Haeckel 1883). The Church has not only obstructed the advance of science, but, in doing so, has obstructed human advance, too. Progress, in the human species, is above all intellectual progress. Knowledge, formerly the property of a narrow elite, must now become the 'common property of mankind'. Only in this way can the steady advance towards freedom and perfection be sustained. An intellectually open, secular and scientific culture must, then, replace the dogmatic confinement of the intellect and the narrow elitism of the clerics. Popularising activities

of scientists themselves – Haeckel was himself a remarkably effective example – must play their part in this.

There was, however, in these earlier writings of Haeckel, room for a more diffuse kind of religiosity. The polemics are quite specifically anti-clerical, rather than anti-religious. Monism was itself susceptible to pantheistic interpretation and Haeckel strongly dissociates himself from ethical, or moral materialism, by which he seems to mean hedonism. Philosophers, he says, are never materialists in this sense, but those who attack them as materialists, the ‘ecclesiastical princes’ practice the worst excesses of moral materialism as is shown by ‘the whole history of the Catholic Popes’, but also by ‘the morals of orthodoxy in every form of religion’ (Haeckel 1876, vol. 1, 37). What Haeckel is opposing here, then, is the intellectual authoritarianism and moral decadence of the church hierarchy, rather than religion as such, though it is also clear from Haeckel’s commitment to mechanico-causal explanation and his critique of the ‘crude anthropomorphism’ of orthodox religion that almost all established religion would be doctrinally incompatible with the monistic philosophy.

We have seen, then, in the work of Haeckel, uses of evolutionary biology to support liberal ideals and causes in the Germany of the 1860s and 1870s have seen, too, how elements of Haeckel’s thought at that time foreshadowed the compromises and the rightward shifts which took place in German liberalism from the 1870s onwards. Rooted in the mutual dependence of the authoritarian Bismarckian state and industrial capital, this collaboration between large sections of liberal opinion with Bismarck’s ambitions was consolidated by the achievement of national unification from 1870 and by the *Kulturkampf* of the early 1870s. There was, however, a more profound underlying cause of this compromising timidity on the part of liberalism: the growing power and influence of the socialist ideas of the industrial workers and their intellectual collaborators. The unification of the two German working class parties under the Gotha Programme in 1875 and their relatively modest electoral gains in 1877 seem to have had a traumatising effect on liberal opinion.

Especially problematic for liberal and progressive evolutionists, such as Haeckel, was the ready use which socialist thinkers were able to make of the more radical aspects of their own evolutionary argument. One of the first Darwinists to engage with the ‘labour question’ was yet another veteran of 1848, the philosopher F.A. Lange, who, despite his favourable references to Marx and Engels, earned their strong disapproval. Lange’s use of Darwin was centrally in the appropriation of the idea of a ‘struggle

for existence' as characteristic of human history. As with Haeckel, the struggle was interpreted in a Malthusian sense, though in its current forms the struggle was a social rather than biological one, between capital and labour. Extremes of poverty and inequality, the result of economic laissez faire had to be eliminated if revolution was to be averted.

Though Lange's views were sufficiently radical to offend others in liberal progressive circles, his position was far removed from the more thoroughgoing socialism of the Social Democrats, who were also rapidly making use of Darwinist arguments to support their case. Among the most prominent of these was August Bebel, whose great work *Die Frau und der Socialismus*, was first published in 1879 and had gone through fifty editions by 1911. As a work of socialist feminism it had a great impact upon the German women's movement, arguing for the mutual interdependence of the struggles for the emancipation of both women and the workers. Bebel advocates a naturalism of the anti-reductionist kind. The laws of evolution, of adaptation and heredity, apply to human evolution just as to non-human: 'Man' is no exception in nature. The struggle for existence, too, is found in both human history and throughout organic nature. But the form of the struggle for existence is transformed in human history according to the changing social relations produced by human evolution itself. In class societies the struggle for existence takes the form of a class struggle, which is itself ultimately transcended under socialism. This transformation and, ultimately, overcoming of the struggle for existence is made possible by one distinctive feature of human history: the struggle for existence leads to ever clearer human understanding of the laws which govern human nature, so that ultimately evolution can be brought under conscious control without need for struggle.

In common with most German Darwinists, as we have seen, Bebel takes the dependence of organic change upon external causes, upon 'conditions of existence' as the hallmark of Darwinism. The struggle for existence is not recognized as an aspect of a quite distinctive evolutionary mechanism, natural selection, but, rather, as with Haeckel, one among several ways in which environmental conditions come to affect the constitution of organisms. Bebel uses an analogy with the tending of domestic animals and plants to suggest that changed conditions of life can bring improvements both here and in human society. For human beings, conditions of life are social conditions, so that the conscious changing of these social conditions is the means of improvement to be employed in human progress. The apparent absence of women geniuses, noted by Darwin, is not surprising for Bebel, given a history of

exclusion of women from education and professional life, just as it is not surprising that the working-class males have not produced their share of genius. The great gulf separating the social classes, both physically and mentally, just as with a great deal of what separates men and women in their achievement, would be obliterated by changed conditions of life. Even within one generation much of this could be achieved and the residue of difference blotted out in their descendants. There remain though individual inequalities and 'natural' differences between the sexes which are related to their sexual functioning. The implication is that these differences cannot be obliterated by institutional change, though the mere existence of these natural differences implies no inequality in social rights and duties or between men and women, and no social inequality is justified beyond what is established by nature itself.

There is, in Bebel's discussion of the bearing of biological considerations upon the position of women in society, a degree of argumentative 'overkill'.⁴ He quotes approvingly the work of Sophie Nadejde to the effect that the much-used companion of male and female brain-weights does not, after all, reflect adversely upon the status of women. Brain-weight varies according to body size, so that in any racial or sexual comparison of brain-weights, the appropriate measure is the ratio of brain-weight to body-size, not the absolute weight of the brain. In this, women are superior to men. Bebel clearly delights in the story that Professor Bischoff, one of the leading advocates of the brain-weight argument against female emancipation, was discovered after his death, to have possessed a brain a little lighter than that of the average woman.

But, as if this argument might be thought inconclusive Bebel further argues that no inferences about intelligence can be made from brain-weight in any case. It is, above all, the organisation of the brain and its use which determines intelligence. Proper nutrition and exercise are essential to brain function. It is noticeable that, consistent with his materialism, Bebel avoids any dualist form of anti-reductionism: the anatomical and physiological basis of intellectual and emotional powers and characteristics is never denied. The biological arguments against female emancipation must, therefore, be encountered and defeated in their own terms. Inferences about mental characteristics may be made from anatomical and physiological investigations, but the anti-feminists have made the wrong ones.

Bebel himself goes on to concede that there are, indeed, great physical and mental differences between men and women, which derive from thousands of years of male supremacy and consequent differences of

training, or use, of the brain. In men, the forebrain, associated with thought is accordingly more developed, in women, the mid-brain associated with feeling and sentiment. These and other anatomical and physiological differences are the present material basis of mental differences between men and women and are the historical outcome of inherited adaptation to the different conditions of life imposed by men on women.

What Bebel does not seem to consider, is how such fundamental differences could be overcome in so short a prospective timespan, given changed social conditions, when they have taken thousands of years to become established. Bebel seems also to lack any foundation in hereditary theory for his implicit distinction between those differences related to differences of sexual function, which are 'natural' and presumably not alterable by the inherited effects of changed conditions of life, and those differences which are so changeable. As if to cover himself from such charges, Bebel refers to John Stuart Mill's inability to detect any male/female differences in intelligence and, rather more pertinently, to Havelock Ellis's argument that whatever their differences men and women are of equal value.

Finally, there is, in Bebel as in Haeckel, a good deal of anti-clerical polemic. Darwinism, like all science, is 'eminently democratic' and this is why it is denounced by the clergy. In their anti-clericalism and commitment to a secular culture, in their naturalistic approach to human history and society, in their opposition to traditional forms of hierarchy and authority, and in many other respects, there is a real homogeneity between the more radical and progressive liberal evolutionists of the 1860s and early 70s, and Social Democrat Darwinists such as Bebel. In both cases, the political and ethical conclusions are drawn from broadly similar interpretations of evolutionary theory. Despite the prominence of the mechanism of the inheritance of acquired characteristics and, therefore, the direct effects of the environment in both cases, both tendencies of social and political thought sustained views of human history as carrying forward, though in transformed forms, the progressive development already evident in organic nature.⁵ Again, for both traditions, growing intellectual awareness of the laws of nature, which must overcome obscurantist clerical opposition, was to be the condition of further human progress. Only in the socialist contention that the consciously planned application of natural scientific knowledge in human social advance required a socialist reordering of society was there a major difference between the traditions. Even on the more controversial question of the emancipation of women, where Bebel was

himself by no means without opposition in Social Democratic ranks, there were progressive liberal social Darwinists, such as Buckner, who had used broadly similar evolutionary arguments to the same purpose (Buchner 1869–70, 305–17).

On the increasingly urgent 'labour question', of course, there were considerable differences between liberal and Social Democratic Darwinism, and these differences are in part indicated by differences not so much in content, but in patterns of emphasis in evolutionary thinking. Both Bebel and Haeckel, for example, were committed to inheritance of acquired characteristics, and to the importance of external conditions of existence in the genesis of organic change. Both were equally committed to the idea of scientific enlightenment as a progressive force. But whereas for Haeckel progress becomes identified with intellectual progress, itself the outcome of the inheritance of psychological adaptations in the struggle for existence, for Bebel emancipation is to come through a transformation of the social conditions of human existence and development which will itself be premised on scientific knowledge of the laws relating to conditions of existence and organic development. These differences of emphasis and articulation of evolutionary doctrines are clearly of significance at the level of drawing more specific social and political programmes out of the application of social Darwinism. I shall return to these and other differences, especially as they relate to the 'labour question'.

Enough has been said, however, to render intelligible the charge that began to be raised against Darwinism in the 1870s that it led directly, and offered encouragement, to socialism and atheism. The most famous episode in the debate surrounding this proposition was the debate between Haeckel and Virchow at the 1877 Congress of German Natural Scientists and Physicians. Haeckel's address was militantly anti-clerical and advocated his mechanico-causal evolutionary world-view as a proper subject for education in German schools. The method of evolutionary biology would be an ideal exemplar of the causal approach to be applied in all subjects. It was Virchow who replied to Haeckel. Somewhat surprisingly, in view of Virchow's own pioneering work in cell-theory and earlier advocacy of the mechanistic approach in physiology, and his position as a progressive liberal member of parliament, Virchow was severe in his reproach against Haeckel's espousal of evolution (Virchow 1877).

Fearing the hostility that would be aroused among Germany's reactionary political rulers by Haeckel's evangelical evolutionism, and seeking to protect his own more compromising and modest political designs

from the taint of any such association, Virchow advised self-restraint on the part of scientists. Virchow was himself still prepared to defend a modest form of secularism, based on a threefold classification of aspects or 'currents' of knowledge: first, dogma, which is taught as truth, without recourse to experimental proof, second, objective truth, which has been established experimentally and, third, a subjective, speculative current of ideas and hypotheses. History has witnessed an advance of objective truth as against dogma, but a condition of further advance in this direction is that the subjective, speculative current in science, itself a quite necessary and proper part of scientific activity, should not be promulgated beyond the boundaries of the scientific community. This is particularly dangerous if speculations are either taught as, or taken to be, objective truth. If, as sometimes turns out, speculation is shown to be false, then science itself loses public esteem and may bring reaction down upon itself. More than this, scientists cannot evade responsibility for the misuse to which others, not trained as scientists, may put their more speculative ideas. Virchow refers to unjustified speculative systems built upon his own cell-theory, but is more apprehensive about the ruin that could come from Haeckel's advocacy of an evolutionary world-view designed to supplant orthodox religion and ethics. Still more damaging than this, however, is the use now being made of evolutionary theory by socialist agitators:

At all events, this theory, if consistently carried out, has a very serious aspect, and I trust it has not escaped your notice that socialism has already established a sympathetic relation with it. (Virchow 1877, 68 ff)

Such dangerous cultural consequences of unthinking promulgation of subjective speculation can only alarm the authorities and poses a threat to the freedom of scientific investigation itself. Scientists should, therefore, exercise self-restraint as regards the promulgation of the more speculative parts of their discipline.

This, of course, does not of itself establish the case against Haeckel. It has, further, to be shown that evolution is such a subjective speculation. Virchow argues that investigation of early man has not yet produced the necessary fossil evidence of intermediate types which would be required to establish the descent hypothesis – indeed recent evidence takes us further away from that conclusion. As against the system-building of Haeckel and others, Virchow advocates a more cautious and provisional emphasis on the contrasts between domains (especially the

organic/inorganic and the human/animal) while recognizing that future research may succeed in connecting them.

Haeckel's defence was contained in his *Freie Wissenschaft und freie Lehre* (1878). More than a defence, it is a counterattack, Virchow now figuring as the dangerous and irresponsible enemy of freedom in science. At a time when social democracy is under threat of legal suppression, and when educational reforms are before the Prussian parliament, nothing could be more dangerous to scientific freedom than to associate evolutionary science with Social Democracy. For scientists to refrain from teaching the subjective element in science would be to abandon science altogether, for research and teaching are inseparably connected and, moreover, all living science is inescapably subjective. All of the sciences are founded upon speculative hypotheses and assumptions which are not experimentally provable.

Virchow's tripartite epistemological classification of knowledge is, then, rejected by Haeckel, and with it the distinction between that which may, and that which may not be taught as 'objective truth'. Haeckel's own commitment to the mechanistic programme for research in biology was learned at Virchow's feet, at a time before his accession to a chair at Berlin, and when he himself had no such reservation against hypothesis and speculation. Thus it is doubly disagreeable to Haeckel to find in Virchow's current position a reactionary reversion to philosophical dualism and to supernatural forces in nature. On Haeckel's view such a position follows directly from the rejection of the theory of descent, as well as the rejection of his own theory of the cell-soul. Either the basis of mental life is referable to molecular properties, or it must arise at some point (for Virchow, with man, or, possibly, some other higher mammals) in evolutionary history through the intervention of mysterious supernatural causes. Similarly, humankind, just as other species, must be supposed to have arisen by natural causes, as proposed by the descent theory, or else by supernatural intervention. On each of his questions, Virchow's professed agnosticism is taken to be a cover for supernaturalism. This would explain Virchow's popular reception in the clerical press.

That Haeckel misrepresents Virchow's stated position on these questions is clear. Nevertheless Haeckel's case for exposing this as Virchow's covert position is strong. The evidence for the theory of descent derives from palaeontology, embryology, comparative anatomy and numerous other sources, and yet Virchow never faces the challenge of examining this evidence. Instead, Virchow simply insists on the absence of 'certain proof'. By this he means experimental proof. Would Virchow recognize

the production of new domestic types by artificial selection as an experimental proof? If not, then there is nothing that the descent theory can, in the nature of things, offer which would satisfy Virchow. Haeckel contrasts the genetic methods of the historical natural sciences – of which evolutionary theory is one – with the experimental methods of the exact natural sciences. The evidence for evolutionary theory, though non-experimental, is nonetheless decisive. Virchow's own specialisation explains his ignorance of the evidence for the theory of descent. Whereas Virchow's great achievement was in the application of exact experimental methods to physiology, other fields of biology have come more and more to recognize the indispensibility of the evolutionary theory. Of course such ignorance of fields in which one does not specialise is excusable, but Virchow should exercise the appropriate restraints he advocates in others. On the specific question of human descent from ape-like ancestors, Haeckel had himself distinguished, some ten years previously, between the descent theory itself and specific hypotheses of descent, the latter of which can be established only in the light of research into the genealogy of particular species or types. Research since then has rendered the specific descent hypothesis in question – the descent of man – the best established of all. As to the continuing lack of adequate fossil evidence, this is to be expected in view of the imperfection of the fossil record, a point made as long ago as Darwin's *Origin* itself.

Haeckel himself distinguishes three elements in evolutionary theory which are confused by Virchow in the course of his attack. First, evolutionary theory can be a comprehensive world-view, which recognizes development throughout nature, which is obedient to a single law of causation 'ultimately' referable to the mechanics of atoms. Second, there is the theory of descent, according to which all compound organisms are understood as descended from simple cells according to some natural process. The truth of the descent theory in this sense is independent of the question as to which of the several possible natural mechanisms of organic change is adopted. Descent theory in this sense was founded by Lamarck in 1809. Third, the 'doctrine of elimination' or 'selection theory', whose importance was first recognized by Darwin, but which is only one among a number of actual and possible 'theories which seek to explain the transformation of species by mechanical principles' (Haeckel 1879, 5).

Giving the lie to his self-proclaimed inductivism, Haeckel attaches the greatest certainty to the first and second, that is the most general, of these three elements in evolutionary theory, while recognizing there is

doubt in how much weight to attach to the third. Virchow is opposed to evolutionary theory at all three levels, but relies on the doubtful character of only one, to cast doubt upon the others.

So far, then, Haeckel is defending his evolutionary world-view against an attack which he takes to be both politically, and from a scientific point of view, reactionary. But the taint of association with socialism is something which urgently needs to be removed. The demonstration of the incompatibility of evolutionary monism with socialism has two broad aspects. First, there are arguments drawn from the evolutionary world-view and general descent theory. Second, there are arguments derived from the applications of 'selection theory' to the human species.

First, then, is the great law of specialisation, or differentiation. This is an evolutionary law of all nature, its application in the organic realm rendering explicable the growing diversity of organisms from a common stock, the growing internal complexity of organisms from simpler ancestors, and in increasing diversity of tasks and conditions of life for members of society as civilisation advances. Both conditions of life and the inherited qualities of individuals are increasingly diversified, so how can either the problems of life, or their solutions be the same for all? As the nature of the contribution of each will necessarily be different, so also will the reward be different. These facts are so obvious that one would expect all reasonable politicians to recommend the evolutionary hypothesis as 'the best antidote to the fathomless absurdity of extravagant Socialist levelling' (Haeckel 1879, 92). It is important to notice here, leaving aside Haeckel's equivocation between 'different' and 'unequal', the combination of both explanatory and normative naturalism to yield a specifically anti-egalitarian (for Haeckel socialism seems to have been equivalent to egalitarianism) political conclusion, whereas in the 1860s precisely the opposite had been the result. As we have seen, in the former case it was mainly arguments from the nature of hereditary processes which generated the conclusions, while in the present argument it is the evolutionary law of specialisation. Particularly significant is that Haeckel had been able to make use of the same law of specialisation, of increasing division of labour, in an address to an audience of working men in 1868 to establish his naturalistic approach to human history, without deriving any inegalitarian moral (Haeckel 1883).

The second demonstration of the incompatibility of Darwinism and socialism is the familiar use of the idea of natural selection in the struggle for existence to provide naturalistic foundations and ethical legitimacy to social competition and the elimination of the 'unfit'. Whereas Haeckel's earlier references to the struggle for existence in

human society had stressed the historical transformation of this struggle into an intellectual competition, the use he makes of this idea is now a much more orthodox Darwinian one, which receives no qualification or modification in its application to human social life. The germs and offspring of every species are immensely numerous compared with the number which can survive to maturity. Only a small and chosen minority can exist and flourish in the resultant struggle for existence and however much 'we may profoundly lament this tragical state of things... we can neither controvert it nor alter it' (Haeckel 1879, 93). Haeckel can, then, conclude of the theory of natural selection that,

If this English hypothesis is to be compared to any definite political tendency as is, no doubt, possible – that tendency can only be aristocratic, certainly not democratic, and least of all socialist. (Haeckel 1879, 92)

This apparently complete reversal from the use of evolutionary theory as a weapon against aristocratic privilege to its defence turns on a shift in the relationship between the ideas of selection and struggle for existence in the explanation of organic change and, for Haeckel, progress. In the earlier works, the struggle for existence combined with the prominence given to the inheritance of acquired characteristics made room for a view of the role of struggle as a stimulus to innovation and perfection in those engaged in struggle, which could be passed on to descendants. This, too, was a feature of Malthus's idea of the struggle for existence. However, if the importance of the inheritance of acquired characteristics is demoted in importance, the struggle for existence is correspondingly elevated as a mechanism whereby weak competitors are eliminated, rather than the means of improvement of the adversaries.

Even so, the reversal of political implications is not quite complete. The theory is aristocratic only in the sense that it postulates a necessary inequality among members of society, in which the highest rewards go to the most successful competitors. It does not go so far as to justify the institution of an hereditary elite in the older sense of an aristocracy characterised by its very separation from the wider competitive struggle. But one of Haeckel's allies in the attempt to dissociate evolutionism and socialism, Oscar Schmidt, did just that (Schmidt 1878). The advantages won by the aristocracy had been achieved by a perfectly natural process and had to be recognized as such. Such a position comes close to making evolutionary theory a doctrine for the defence of any actually existing form of social order whatsoever.

This increasingly reactionary turn of German Darwinism, especially the Haeckelian monist form of it under the presumed threat of the Social Democratic workers movement, leant itself to a number of conservative causes towards and after the turn of the century. The racial doctrines which had been present in evolutionary thought since the earliest attempts to establish the descent hypothesis by postulating present 'lower' races of humankind to be intermediate forms between the 'higher' races and their ape-like ancestors were readily available to provide naturalistic ethical legitimacy to colonial suppression when, in the early 1880s, Germany joined the race for colonial acquisition, especially in Africa.

As early as 1865 Haeckel was himself applying the concept of struggle and selection to the relationships between human races in a way that was not extended to inter-individual competition in 'civilised' societies until, as we have seen, the Social Democratic challenge of the 1870s. His *Pedigree of Man* distinguishes ten races, or 'species' of men, of which

... the first, primitive man, is dead this long time past. Of the nine others, the next four will pass in a shorter or longer time Even now these four races are diminishing day by day. They are fading away ever more swiftly before the o'er-mastering white invaders. Melancholy as is the battle of the different races of man, much as we may sorrow at the fact that might rides at all points over right, a lofty consolation is still ours in the thought that, on the whole, it is the more perfect, the nobler man that triumphs over his fellows, and that the end of this terrific contest is in the vast perfecting and freedom of the human race, the free subordination of the individual to the lordship of reason. (Haeckel 1883, 85)

In the closing decades of the century, then, social Darwinism, in its uses to support German imperialism and in its opposition to emancipatory demands from the workers at home, comes to emphasize the inegalitarian and selective character of the struggle for existence, and to demote in importance the idea of the inheritance of acquired characteristics. From the early 1880s onwards Weismann's thesis of the separation of the germplasm, and the growing conviction that the inheritance of acquired characteristics could no longer be sustained, provided a theoretical basis for this tendency of social and political thought. One of Haeckel's Monist followers, Heinrich Ernst Ziegler, for example, a former student of Weismann, published an attack on Social Democracy (*Die Naturwissenschaft und die socialdemokratische Theorie*, 1893) explicitly

on the basis of their unjustifiable belief in the inheritance of acquired characteristics. Human instinctive character must be supposed fixed and unchanging over very long periods of time on the Weismannian genetic hypothesis, so that any institutional changes which might be proposed in the foreseeable future could not be expected to bring about the improvements which Social Democrats hoped for (Burnham 1972; Gasman 1971).

Haeckel's monist religion of nature became closely aligned in these later years with the Volkisch tradition in Germany, whose assertion of racial identity and romantic ideology of unity with Nature, understood in a territorial/nationalistic sense, were to become very much later a not insignificant source of Nazi ideology. Haeckel himself, by advocating Aryan superiority and racial eugenics served to lend the weight of scientific authority to the most reactionary currents in the German culture of the period (Gasman 1971, Introduction). Finally, in 1906, a Monist League, with Haeckel as its leader, was established, giving an organisational framework and political programme to what had hitherto been a diffuse though influential cultural movement. The 'racial anthropology' and 'racial hygiene' of the turn of the nineteenth century and early decades of the twentieth are beyond the scope of this chapter (Stark 1961; Zmarzlik 1972), but suffice it to say they made use of neo-Darwinian and neo-Malthusian ideas and were important in the reorientation of the political right in Germany around racially inspired imperialist politics, and also were important in securing the attachment of the previously liberal and oppositional non-Social Democratic feminist movement to Germany's imperialist political imperatives (Evans 1976).

But German social Darwinists in general, and the Monists in particular, were not universally or unequivocally anti-Social Democratic. There were some among the left wing of Haeckel's Monist movement who advocated a common anti-clerical front with Social Democracy. The influence of such Monists in the German Social Democratic party itself could not be discounted, especially in the context of some considerable theoretical confusion in the latter, as witnessed by Ryazanoff (Ryazanoff nd, 207).

Prompted, perhaps, by what he saw as the political necessity to provide a clear and systematic account of his and Marx's views, contrasting them with Monism and other competing world-views, and offering a basis for unifying the German Party, Frederick Engels returned in his later writings to questions of a philosophical and natural scientific character. But as well as the political requirement, there was an intellectual challenge, too. Both Marx and Engels had been among the first to

welcome Darwin's *Origin of Species* (Marx and Engels 1965, 123) and, like Haeckel, they welcomed it specifically for its anti-teleological implications. Moreover, as we have seen, there is much in common philosophically and methodologically between Haeckel's monism and the materialism of a Social Democrat such as Bebel. Even on the more specific appropriations of evolutionary ideas from biology, the differences are not always obvious. Add to this the great authority of Haeckel on biological questions, an authority persistently accepted by Engels himself, and the intellectual challenge presented by the increasingly right wing and anti-socialist character of monism is inescapable.

As we have seen, Haeckel's Monism was a form of explanatory naturalism. Where Haeckel is most concerned, especially in the earlier writings, with drawing progressive consequences from the application evolutionary ideas to human society, his naturalism tends to be of the anti-reductionist kind. Emphasis is placed on the way in which historical evolution itself transforms the character of the 'struggle for existence' into an intellectual competition. The role of sexual selection, too, is stressed where human evolution is concerned. At the same time, in his anti-clerical polemics Haeckel is at his most reductionist: even the highest human mental and spiritual achievements must ultimately be referable to the mechanics of atoms. This reductionism is also evident in the literal and unqualified application of the biological ideas of 'struggle' and 'selection' in the field of racial conflict and, later on, to social relations in 'civilised' states.

While maintaining his commitment to Darwinism as a biological doctrine, and to explanatory naturalism, Engels is faced with the challenge of demonstrating the consistency of socialism with Darwinism. He meets this challenge by way of a two-pronged argument, the first prong directed at the methodology and metaphysics of Monism, the second at its specific appropriation of Darwinian doctrine. The arguments are contained in *Anti-Duhring*, the essay 'Ludwig Feuerbach and the Outcome of Classical German Philosophy', the posthumously published *Dialectics of Nature* and a number of items in the correspondence.

First, the metaphysical and methodological critique. Engels counterposes his own 'modern', or 'dialectical' materialism to the 'mechanical', or what he calls 'metaphysical' materialism of the eighteenth century. The mid nineteenth-century German materialism was also of this sort, as is Haeckel's Monism. What characterises mechanical materialism is 'the exclusive application of the standards of mechanics to processes of a chemical and organic nature' (Marx and Engels 1953, vol. II, 338), and the explanation of all qualitative differences from quantitative ones

(Engels 1969, 443). The mechanical materialism of the eighteenth century combined a sound but limited basis in scientific knowledge with nonsensical speculation; this speculative aspect was inevitable given the levels of development of the sciences themselves during that period. Newer developments in the sciences, in chemistry, in physiology, geology and, above all, evolutionary biology itself, have rendered such speculative completion of the materialist world-outlook superfluous. The systematising and generalising work of materialist philosophy now has an adequate basis in science itself: science 'absorbs' philosophy (Engels 1969, 17, 20, 35–6).

Mechanistic materialism as a philosophical strategy is in error in recognizing only the interconnectedness of the domains of nature and not their distinctness. Certainly, the realignment and convergence of whole fields of theory hitherto developed separately (organic/inorganic chemistry, mechanics/theory of heat, and so on) is an impressive feature of nineteenth-century science and it confirms the materialist conception of the unity of nature. Nevertheless, Engels argues:

That the present tendency of science goes in this direction can be readily granted, but does not prove that this direction is the exclusively correct one, that the pursuit of this tendency will exhaust the whole of physics and chemistry. (1969, 443)

In particular, the very historically-produced unevenness in the level of development of the different sciences and their continuing discreteness implies that nature, though a unity, is also internally structured and differentiated.

On the basis of such arguments as these Engels counterposes to mechanical materialism an approach which recognizes both the unity and interconnectedness of the subject-matters of the different sciences, and their relative distinctiveness and autonomy. What is involved here is a kind of natural scientific ontology of nature as a unified, though internally structured and differentiated whole, which Engels regards as preferable to the ontology implicit in mechanical reductionism. Instead, Engels proposes an ontology constituted by an hierarchy of 'forms of motion' with transitions one to another which 'despite all gradualness' nevertheless constitute a 'leap, a decisive change' (Engels 1969, 83).

To characterise this 'leap' Engels makes use of the Hegelian notions of a 'nodal' point and the transformation of quantity, into quality (and vice-versa), but, fortunately, he does not always use this terminology.

In a note to *Anti-Duhring*, for example, Engels comments on his own classification of the sciences in terms of his hierarchy of forms of motion as follows:

If I term physics the mechanics of molecules, chemistry the physics of atoms, and furthermore biology the chemistry of albumens, I wish thereby to express the passing of anyone of these sciences into one of the others, hence both the connection, the continuity, and the distinction, the discrete separation. (1969, 442)

Engels's use of the Hegelian law of transformation of quantity into quality (and vice-versa) in this context can be understood as a first approximation to a concept of emergent qualities and laws, consequent upon a given level of organisation of matter, and requiring distinct concepts, language and methods for their characterisation and investigation. Thus, in Ludwig Feuerbach we get the admission that the 'standards' of mechanics are, after all, applicable to chemical and organic processes, 'but are pushed into the background by other, higher laws' (Marx and Engels 1953, vol. II, 338). In this way, then, Engels seeks to avoid the reductionism of the mechanical materialists, without, at the same time, making unnecessary concessions to the dualist absolute separation of the domains of nature. In short, what Engels attempts in these writings is to theorise a materialist naturalism which is consistently anti-reductionist, by contrast with the reductionism of the mid-nineteenth-century German materialists and the uncertain vacillation on this question which characterises Haeckel's work.

There is a further argument used by Engels to counter mechanical materialism, but its applicability to Haeckel is somewhat doubtful. This argument is that the newer developments in science increasingly sustain an historical developmental view of the universe, which is incompatible with mechanical materialism. This historical view of the universe is summed up in Ludwig Feuerbach as 'the conception that the animate natural beings of today are the result of a long sequence of development from the simple to the complex' (Marx and Engels 1953, vol. II, 339). Paradoxically enough, this historical conception is quite recognizable as the Haeckelian one, with its evolutionary laws of progressive development and increasing differentiation. It is nevertheless true that Engels holds a quite distinct version of the historical conception. The notion of a hierarchy of levels of complexity of matter in motion as the basis for discrete domains in nature, each the object of a specific scientific knowledge also has a historical aspect: the historicity of nature is the

emergence, in temporal series, of new levels of complexity in forms of motion. This is, indeed, a feature of Engels's sketch for a history of the world in the Introduction to the *Dialectics of Nature*. The domain of nature with which each science deals represents not only a distinct level of complexity of motion, but also a definite stage in the historical evolution of the universe. The historicisation, then, of the anti-reductionist 'emergentism' in Engels's ontology, distinguishes Engels's historical conception from Haeckel's. They share a commitment to a quasi-teleological notion of progressive development in the universe, but Engels alone is committed to a philosophical representation of the genesis and transformation of novel forms and structures as specifically historical problems.

Engels complements this distinction between his and Haeckel's historical conceptions with critiques of Haeckel's presentation of evolutionary theory as an induction, and of Haeckel's simple opposition between efficient (= mechanical) and final causes. Forms of causality, for example, the causality required for functional explanation in biology, are defended by Engels as neither teleological nor reducible to mechanical causality (Benton 1979, 120–1). Finally, the contrast between Haeckel's animist (even pantheist) treatment of the mind/matter relationship and Engels's historical emergentist treatment of it is also referable to their ultimate commitments to quite different forms of naturalism: reductionist and anti-reductionist respectively. But it would be wrong to overstate these differences. Haeckel's positions on such philosophical questions tended to shift, as I have indicated, depending on the polemical context. In the debate with Virchow, for example, Haeckel makes use of a contrast between the exact, experimental sciences and the historical, genetic sciences which comes close to Engels's position. Moreover, the fundamental commitment to a scientifically based evolutionary–historical and naturalistic conception of the universe was common ground between them.

Also common ground was a particular version of evolutionary biology. While Engels does not hesitate to question Haeckel's philosophical views, or his social Darwinism, he (Engels) treats Haeckel with considerable respect on biological matters (Benton 1979, 128ff; Gasman 1971, 108ff). In particular, Engels, in common with other Social Democrats, follows Haeckel in giving considerable weight to the inheritance of acquired characteristics as an evolutionary mechanism. As I have already suggested this mechanism, by contrast with the thesis of the separation of the germplasm combined with natural selection, makes a biological reductionist treatment of human history much more readily

achievable. Anatomical, physiological and cultural characteristics in human populations may all be held to be subject to transformation in just the same sense, and by just the same mechanisms as are found in non-human organic nature. This was, indeed, the view generally taken by Haeckel.

It would not be surprising, then, to find Engels following Haeckel in this, too. The temptation might be further reinforced by Engels's use of the 'laws of the dialectic' indifferently to the analysis of human and non-human natural history. Also, the resonance between the Marxian socialists' emphasis on class struggle and the Darwinist 'struggle for existence' especially in view of the indeterminacy in the biological debate itself as to the nature of the units engaged in this struggle might give further support to a reductionist appropriation of Darwinism by Engels.

There is indeed evidence from Engels's notes that his neo-Lamarckianism did lead on occasion to biological reductionism. For example, in the notes to *Anti-Duhring* he argues that natural science has transformed the subject of experience for epistemology from the individual to the 'genus', through the notion of inheritance of acquired characteristics:

If, for instance, among us the mathematical axioms seem self-evident to every eight-year-old child, and in no need of proof from experience, this is solely the result of 'accumulated inheritance'. It would be difficult to teach them by a proof to a Bushman or Australian Negro. (Engels 1969, 436)

Similar passages are also to be found in Engels's essay on 'The Part Played by Labour in the Transition from Ape to Man', which relies quite explicitly on the Lamarckian evolutionary mechanism.

But the great weight of the work of both Marx and Engels on the relationship of Darwinism to human history both asserts the relevance and importance of the former to the latter and rejects the reduction of the latter to the categories of the former. Darwinism's authoritative extension of the idea of the historicity and unity of the world, together with its methodological triumph over supernaturalism constitute its pertinence to human history. Nevertheless, rigorous analysis of the adequacy and scope of the concepts of Darwinian evolutionary theory, backed up by the general ontology of an internally structured and differentiated world both indicate the relative autonomy of human history vis-à-vis the history of the rest of organic nature.

Both Marx and Engels devote specific critical attention to the attempt by F.A. Lange and others to represent the struggle for existence, in its Malthusian sense, as an 'eternal natural law of society' (Marx and Engels 1965, 301). In Engels's version, this critique has two stages. First, there is a discontinuity within organic nature between the human species and the rest of the animal world which is established with the emergence of production as a distinctively human form of activity. In the Notes to *Dialectics of Nature*, and in his letter to Lavrov (Marx and Engels 1965, 239, 171), Engels makes this point by way of a contrast between, at most, 'collection', which is the means by which other animals achieve their subsistence and 'production', by which human beings prepare means of life which nature itself would not have prepared. It is the process of coming into being of this distancing of the human species from other animals that Engels describes in terms of Lamarckian evolution in 'The Part Played by Labour'. But notwithstanding the biological character of the mechanism which explains the genesis of the new phase in the history of the world, Engels is quite clear that once it is established its further history cannot be understood in biological terms only. The significance of the collection/production distinction is that it 'makes impossible any immediate transference of the Laws of Life in animal societies to human ones' (Engels 1941, 209).

Engels is here making use of the arguments developed by both Marx and himself against the 'Malthusian population fantasy' which, having been generalised with some modification, by Darwin to characterise the struggle for existence in nature, is now reappropriated by social Darwinism as a law of human societies. Even as early as 1844 Engels was arguing, against Malthus, that, so far as human societies are concerned, the availability of means of subsistence is not a natural fact confronting a population, but is itself a function of social organisation and technical competence. As population increases, so increases the labour available for agricultural production, and with the advance of science and its application in agricultural technique, so the productivity of such labour as is applied to agriculture can be expected to increase (Marx and Engels 1965, vol. 3, 439).

It follows from this that the struggle for existence supposed by Darwinians to arise in nature from the discrepancy between the procreative powers of organisms and the availability of means of subsistence either no longer operates with the commencement of human social production, or, at the very least, is transformed in character. This latter position is adopted by Bebel, for whom there is a struggle for existence in society, which derives, however, not from the Malthusian ratios,

but from defective social distribution of the means of subsistence. Moreover, this struggle is itself historically transitory, as past increases in agricultural productivity, together with the prospective extension of the areas of the earth under cultivation suggest.

Bebel further complements Engels's arguments against neo-Malthusian social Darwinism by calling into question not just the Malthusian assumption concerning the availability of means of subsistence, but also the assumption concerning procreative powers. It is true that the sex-instinct is perennial in the human species – indeed, it is our strongest instinct and its gratification is essential to health. But the gratification of the sex-instinct is not equivalent to begetting and conceiving. With domestic animals and, therefore, possibly among human beings with advancing civilisation we find that fertility declines. With the possibility of artificial prevention together with the effects of conditions of life upon fertility, the Malthusian assumptions concerning the threat from overpopulation are unfounded. Of course, Malthus, too, recognized that the tendency of populations to increase with geometric ratio would not ordinarily be realized, because of the combined effects of vice, misery and moral restraint. What Bebel argues, against Malthusianism, is that the conscious restriction of population growth does and will arise from motives neither directly nor indirectly deriving from shortage of the means of subsistence. There is plenty of evidence, he argues, that it is among those who suffer the greatest misery and poverty that we find the greatest procreativity. Equally, the higher and freer the position of women in society, the greater is the disinclination to large families. Socialist measures to alleviate poverty and emancipate women can, therefore, be expected to reduce the rate of increase in population, as well as unleashing hitherto restricted productive powers in such a way that the struggle for existence even in its residual, social form will be transcended.

In Engels, too, the separation between the human species and other organic species, established with the institution of social production, is supplemented by further historical transitions, peculiar to the human species, which establish a still greater gulf between the laws and mechanisms of organic nature and those of human society. With each new phase of specifically human development, a new situation arises as to the relationship between the social and the biological, and hence, as to the applicability of biological concepts to the interpretation of social relationships and their transformations. Even if such concepts as 'the struggle for existence' continue to have a limited and conditional applicability after the establishment of production, production itself soon

brings about a new phase of human development which rules out even this conditional applicability:

the struggle for existence – if we permit this category for the moment to be valid – is thus transformed into a struggle for pleasures, no longer for mere means of subsistence but for means of development, socially produced means of development, and to this stage the categories derived from the animal kingdom are no longer applicable. (Marx and Engels 1965, 303)

But this phase of human development, which coincides with the existence and struggle of social classes, produces its own transcendence when its highest form – capitalist society – bursts its self-imposed barriers to the development of human productive powers:

The struggle for existence can then consist only in this: that the producing class takes over the management of production and distribution from the class that was hitherto entrusted with it but has now become incompetent to handle it, and there you have the socialist revolution. (Marx and Engels 1965, 303)

For the phase of human history which Engels identifies with the existence of classes and class struggles, then, the notion of 'struggle for existence' still has some resonance as a metaphor, but '(e)ven the mere contemplation of previous history as a series of class struggles suffices to make clear the utter shallowness of the conception of this history as a feeble variety of the 'struggle for existence'. The further, future, phase of human existence constituted in the transcendence of capitalist society by the operation of the mechanism of class struggle will abolish even the metaphorical application of the phrase 'struggle for existence'. The conscious and planned character of social production and distribution will raise mankind above the other animals 'as regards the social aspect' as did production in general 'as regards their aspect as a species'.

Bebel further complements Engels's arguments concerning the applicability of biological categories to specifically capitalist societies in his direct response to the Virchow/Haeckel debate and the subsequent attempts by the followers of Haeckel to demonstrate the incompatibility of Darwinism and socialism. According to Bebel, Haeckel, Schmidt and others of this 'wing' of Darwinism, applying the idea of the struggle for existence to capitalist society, and so representing the propertied and cultured classes as having acquired their dominance by a natural and,

therefore, legitimate process of struggle, simply fail to understand the economic laws of capitalist society. Conditions of capitalist competition allow the most corrupt, reckless and unscrupulous to rise and, having risen, to provide the best possible conditions of existence for their offspring. Only ignorance could sustain the view that such a system is one of the 'fittest and best'.

Both Bebel and Engels, then, provide substantive arguments to demonstrate that the historical emergence of human society and its further development, while continuing to be subject to the same laws that govern the rest of organic nature, nevertheless bring into being a new order of historical reality, along with its own specific and distinctive mechanisms, processes and laws. Each phase of human existence establishes a new relationship between human and non-human organic nature and so the question of the extent of the validity of application of biological categories to social processes has to be posed anew with each phase. In particular, the application of the concepts of struggle for existence, selection and survival of the fittest to provide a naturalistic justification for the consequences of capitalist competition, and demonstration of the disastrousness of a socialist transition, is shown to rest upon a distortion of the biological ideas themselves, or upon ignorance of the laws of capitalist society. In Engels's work, this more specific argumentation is further supported by a scientific metaphysics which represents human history as an extension and as an aspect of the historicity of all nature, but which nevertheless recognizes it as a discrete and relatively autonomous domain in nature with its own specific laws and processes.

Conclusion

In the above illustrations we have witnessed Darwinism at work in a series of phases and conjunctures of German history in the latter part of the nineteenth-century. We have seen it as part of the armoury of a progressive German liberalism in its opposition to aristocratic conservatism prior to unification and then in alliance with the Prussian state against clericalism. Then again we find Darwinian ideas figuring as an indispensable weapon for combating socialism and a cultural buttress for imperialism, as well as part of the armoury of reformist socialism, revolutionary socialism and feminism.

In each of these conjunctures and serving all of these purposes we find, on the one hand, a diversity in the conceptual appropriations from biology and their respective emphasis. On the other hand, we find

a diversity of ways of incorporating and bringing to bear on social and political questions what is often one and the same biological idea. Social Democrats, for example, shared with Haeckelian monists a commitment to environmentalist explanation of both organic and social change and to the inheritability of acquired characteristics, but the combination of these ideas with the literal application of the concept of struggle for existence in the latter case, but not the former, was the source of a fundamental political opposition, especially from the 1870s onwards. Underlying this difference was, in turn, a difference in the forms of naturalism – reductionist and anti-reductionist respectively – under which biological categories were appropriated for political purposes.

What is clearly implicit in my presentation is my own commitment to the view that, however currently unfashionable, scientific metaphysics, as a form of mediating discourse between science and popular culture is a defensible intellectual and political enterprise. What should also be clear is that not all such mediating discourses are equally intellectually or politically defensible. The task of presenting such defences or critiques and providing criteria for them is one I leave for another day.

Notes

1. I have in mind the work especially of Robert Young and the group of writers associated with the *Radical Science Journal*.
2. The German translation by Heinrich Bronn, a prominent palaeontologist, appeared in 1860. Bronn appended an epilogue explaining his own reservations about the theory.
3. The term 'recapitulationism' in this context refers to the doctrine promulgated by Haeckel among others, that the embryological development of the higher animals 'recapitulates' the phylogenetic history of the species. See Coleman 1973; Lovejoy 1959.
4. These arguments are especially concentrated in chapter 4 of the section *Die Frau in der Gegenwart* in the 33rd edition, but the organisation of the material underwent considerable changes in the many editions of the book. I have neither the space nor the bibliographical means to conduct what would undoubtedly be an interesting investigation of the successive changes introduced by Bebel into the many editions of the book.
5. As against an open, conjunctural conception of history, which would have been more consistent with their shared 'environmentalist' assumptions.

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4

A Darwinian Historical Materialism¹

Paul Nolan

Although developed in the crude English fashion, this [*On the Origin of Species*] is the book which, in the field of natural history, provides the basis for our views.

Karl Marx (to Engels, 19 December 1860)

It is (or used to be) a commonplace of Marxian commentary that Marx did for human history what Darwin had done for the organic world. Possibly the most famous instance of this is Engels' 'Speech at the Graveside of Karl Marx' (1883, 429–30). But Marx himself also made claims for connections and parallels between natural selection and historical materialism, one example being the above epigraph. Unfortunately, these claims seem never to have progressed beyond general observations. In this essay I want to develop a more detailed connection between the two theories.

I begin with a brief outline of the theory of natural selection and a sketch of some of the long-term tendencies within populations and species that natural selection perhaps gives rise to. Following this, I suggest a process analogous to natural selection that could operate in human history, albeit involving an intellectual origin and behavioural transmission of the relevant variations rather than a genetic origin and reproductive transmission. I go on to discuss one of the difficulties raised by these differences: that cultural diffusion could subvert a quasi-Darwinian selective process. However, I suggest that if the historical tendencies that could be inferred from the operation of such a quasi-Darwinian process have been realized, this might reduce the threat that diffusion poses for the theory. But this then raises the possibility that any selection of reproductively advantageous cultural traits through differential reproductive success has been preempted by some other mode

of selection of such traits, perhaps involving an intentional selection. However, I give some reasons to doubt that any other mode of selection could produce the required long-term tendencies.

Turning to historical materialism, I point out its lack of a robust, general mechanism with which to elaborate its explanatory claims. In order to provide such a mechanism, I link historical materialism with the quasi-Darwinian approach to human history outlined earlier. I attempt to sketch the explanatory structure of such a theory and the way it synthesises Darwinian and Marxian elements and I discuss some long-term historical tendencies that it implies. Finally, I point to one or two of the difficulties faced by the resulting theory.

Natural selection

The core of the theory of natural selection is the claim that inherited traits that enhance reproductive success, given the existing relationship between the organisms and their environment, tend to be more successfully reproduced. In any population of organisms, any morphological, physiological or behavioural variations that standardly lead to improvements in rates of reproductive success (often through improving survival rates) will, if they are inherited, thereby increase their representation in subsequent generations, given the appropriate conditions and if this is not countered by other evolutionary forces.² The variations are selected, then, for their propensity to enhance reproductive success.

It is usual to focus upon the *particular* changes that are part of a population's adaptation to its living and non-living environment. The other side of the Darwinian coin, however, is that over time, if favourable variations continue to arise and if environmental conditions remain constant (or at least not too unfavourable), there will be an increase in the mean fitness of the organisms making up the population, in their ability to survive and reproduce from generation to generation (Levine and Sober 1985, 307–8, 309).³ This occurs because it is the more successful reproducers that tend to give birth to a disproportionate number of the next generation, thereby transmitting more of the inherited characteristics that make them more successful reproducers. The average fitness of the individuals making up the population should, therefore, rise in successive generations. According to Levine and Sober (1985, 308), R.A. Fisher designated this, in a somewhat more precise and quantitative form, the 'Fundamental Theorem of Natural Selection' (cf. Fisher 1930, 35).

Of course, in reality there are environmental limits to the indefinite growth of any population. What is more, the living and non-living

environments are very unlikely to remain constant. As competing populations are also likely to be undergoing a process of selection and consequent adaptive improvement, there may be no increase in the rates of survival and reproductive success of the organisms of any particular population. The organisms become better equipped for survival and reproduction, but no more successful in actually surviving and reproducing, the so-called Red Queen effect (Dawkins 1988, 182–4). One obvious example of this would be the increasing speed, over evolutionary time, of a species of predator being matched by the increasing speed of its prey species. Changes in physical conditions may also counter improvements in the adaptive equipment of organisms and produce an actual record of more or less constant, or even declining, fitness as organisms at best merely ‘track’ their changing physical environment (Dawkins 1988, 181).

A quasi-Darwinian theory of history

We can distinguish two claims involved in any strictly Darwinian explanation. The first is that variations in morphology, physiology or behaviour lead to systematic variations in rates of survival and reproduction. The second claim is that these variations are explained by genetic variations and are thus inherited (to simplify considerably). These inherited variations are, therefore, selected or deselected through their reproductive consequences.

The crucial problem with the extension of a Darwinian sociobiology to human social behaviour involves the second of these claims. Many, perhaps all, of the historical changes and cross-cultural differences in human social behaviours that are of interest to historians, sociologists and so on, seem to be unrelated to genetic change and variation (Harris 1979, 119–40). In other words, historical changes and cross-cultural differences cannot be explained in the standard Darwinian way, through the differential reproduction of genetically inherited variation.

Nevertheless, those concerned with human society and history must accept that some ‘non-genetic’ behavioural traits can lead to improvements in the survival rate and reproductive success of those exhibiting them, or, to put the same point in a different way, that variations in ‘non-genetic’ behavioural traits can explain (some) variations in rates of survival and reproduction. This is closely akin to the first Darwinian claim, but the denial of the crucial second claim, that the behavioural variations are genetically explained and inherited, precludes any straightforwardly Darwinian explanation of long-term changes and large-scale patterns in these behavioural traits.

However, although these behavioural variations may not be genetically inherited, they can be culturally transmitted and we can designate as 'cultural' or 'social' characteristics or traits that can be so transmitted. If we make the simplifying assumption that offspring usually adopt the cultural traits of their parents, only occasionally making relatively minor cultural innovations, then cultural traits that enhance survival and reproductive success are likely to spread through human populations from generation to generation, at the expense of traits that do not confer a reproductive advantage. This process could perhaps be described as a natural selection of cultural variation.

However, although cultural traits *can* be transmitted in this simple way, they may not be. Human beings are free, to some degree, to choose which parental cultural traits they adopt, to adopt the cultural traits of others and to make major cultural innovations. This disassociation of the transmission of the relevant characteristics from the process of biological reproduction raises a problem for any attempt to use Darwinian forms of explanation in social theory.

With natural selection, because they originate through genetic mutation and recombination and are, therefore, biologically inherited, the differential spread of the characteristics that differentially affect reproductive success occurs *through* the process of differential reproductive success. But cultural variations that differentially affect human reproductive success are not explained by genetic variations and are, therefore, not (differentially) spread by the process of reproduction itself. In principle, therefore, the differential transmission of cultural traits might bear no resemblance to the differential reproductive success of the bearers of those traits. If this is the case, then the spread or disappearance of particular cultural traits cannot be explained by their effect on the reproductive success of those exhibiting them. Because I want to emphasize the importance of differential reproductive success in explaining historical change, I therefore need to show that, even if patterns of cultural inheritance do not *precisely* map onto patterns of biological reproduction, the processes of biological reproduction and cultural transmission do not actually take place as independently as they could take place.

It is convenient to frame my discussion here in terms of group selection. Let us think of the human species (and human populations?) as divided into groups that constitute (to some extent and for some significant period) discrete reproductive lineages. It is the diffusion of cultural traits *between* these groups that is the problem that cultural transmission presents here for quasi-Darwinian explanations in the social sciences.

Or, rather, the problem is the too rapid diffusion of varying cultural traits and thus the reduction of the between-group cultural differences that might give rise to the between-group differences in reproductive success that are essential to a selective process.

The least favourable alternative for a quasi-Darwinian process is that cultural traits are inherited randomly, that is with no greater chance of being passed on within groups than between groups. If, on the other hand, cultural traits have a tendency to be inherited within groups rather than between groups (perhaps because of the relative proximity of members of the same group, or geographical, linguistic, or cultural barriers between groups) and this tendency is significant enough to allow between-group variation in cultural traits to persist, variation that gives rise to systematic between-group differences in reproductive success, then a selective process can take place in which reproductively advantageous characteristics can spread in successive generations of human populations (or the human species).

The longer a characteristic (or set of characteristics) that gives rise to some differential reproductive success is not dispersed between groups (or the greater the inequalities in reproductive success conferred by the relevant characteristics), then the more likely is a tendency for the reproductively less advantageous variants to be replaced by the reproductively more advantageous variants within the larger population (or species).

Whether reproductively advantageous cultural traits will or will not spread within a human population and the rate at which this might happen are decided, therefore, by the relationship between two factors: the speed of diffusion of the relevant traits and the extent of the differences in reproductive success conferred by those traits. The faster cultural traits diffuse between groups, the greater the inequality in their effect on reproductive success would need to be for them to generate a selective process that would lead to the spread of reproductively advantageous traits. Conversely, the more slowly cultural traits are dispersed, the less the inequality in their effect on reproductive success would need to be for a selective process to occur.

Obviously, this argument is some distance from being decisive, but it might be possible to reinforce it with some appropriate historical evidence. Suppose that, historically, the human species has tended, not just to increase in numbers, but to increase at an accelerating rate. This could only have happened if, over the long-term, reproductively more advantageous traits have replaced reproductively less advantageous traits.

This, in turn, could be explained by the selection of reproductively advantageous traits through differential reproductive success. Insofar as a quasi-Darwinian process of this sort occurs in human populations, we should expect to see reproductively more advantageous cultural traits replace reproductively less advantageous cultural traits within these populations. If Darwinian natural selection is any guide, many of these traits will be adaptations to local environmental conditions. But this also raises the possibility of long-term historical tendencies. An analogous tendency to the increasing fitness of Darwinian populations is perhaps predictable, that is there could be an improvement over the long-term in the ability of human populations to survive and, crucially, to reproduce. Consequently there could be, not merely a tendency to population growth (which would be compatible with constant reproductive success, so long as it was above the replacement level of the population), but a tendency for the rate of growth itself to increase.⁴

There are, it seems to me, three possible approaches to explaining accelerating population growth other than by the process of (non-intentional) selection through differential reproductive success that I have suggested: an intentional selection of reproductively advantageous traits; an intentional selection of other traits (such as productive efficiency) that, incidentally but standardly, enhanced reproductive success; or a non-intentional selection, by a mechanism other than differential reproductive success, of traits (again, such as productive efficiency) that, incidentally but standardly, enhanced reproductive success. These alternatives are not mutually exclusive. As with diffusion, the choice between them is not *either* intentional explanations *or* non-intentional explanations, it is a matter of degree and emphasis. But I suggest that there are good reasons for thinking that a non-intentional, quasi-Darwinian selection is the most plausible of the four options.

Any argument for a non-intentional selection of reproduction-enhancing traits through a process other than differential reproductive success must specify an alternative selection mechanism to differential reproductive success, one that leads, nevertheless, to a spread of reproduction-enhancing traits and therefore to increasing reproductive success over the long-term. If, for example, a non-intentional selection mechanism that led to increasing productive efficiency could be suggested, then this could incidentally but standardly have led to increasing reproductive success. It may be due to my own intellectual limitations, but I cannot imagine any such selection mechanism other than competitive markets and competitive markets have played, at most, only a marginal role in most societies historically.

The remaining options involve an intentional selection, either of reproductively advantageous traits, or of other traits that, incidentally but standardly, enhanced reproductive success. I think it unlikely that straightforwardly intentional processes could (without the intervention of some quasi-Darwinian selection) entirely explain the spread of reproductively advantageous traits, at least for most of human history. Even if we allow the assumption that human beings are primarily concerned to increase their reproductive success (or to increase other things that incidentally enhance their reproductive success, such as their productive efficiency, their material well-being, or their longevity), I doubt that, in general, they could know with any degree of certainty *which* cultural variables would increase any of these. This is particularly true given unintended social and environmental consequences of human actions. A more realistic view, it seems to me, is that people adopt a variety of traits, some of which are more 'adaptive' than others. Given the complexity of social and, especially, environmental circumstances; the fact that these circumstances may well be changing; the long causal chains often initiated by human behaviours, particularly with respect to environmental impacts; and the resulting time lag between behaviours and their more remote effects; then 'experience' or 'trial and error' are unlikely to be reliable indicators of which traits are the more adaptive and which are the less adaptive. The traits can probably be regarded as largely 'random' with respect to long-term reproductive success. Only differential reproductive success can standardly select the more adaptive, meaning, therefore, the most reproductively advantageous, traits.

Intentionality (of a realistically qualified sort, based upon imperfect knowledge and rationality and limited power) might, at best, produce a slight trend towards adaptive responses *within* groups, while selection could occur *between* groups (assuming that they are 'adapting' at different rates), accelerating any adaptive trend produced by intentionality and directing it more towards an adaptation that maximises reproductive fitness rather than, say, survival or material well-being. And, of course, if selection is occurring between groups, this significantly increases the pressure upon (the members of) each group to adopt adaptive cultural traits. Perhaps this process could be described as a natural-cum-intentional selection of cultural variation.

It is possible, perhaps probable, that the capacity of human beings (and human groups) to identify and adopt adaptive behaviours has increased through human history and if this is so it would progressively reduce the room for a selection process. But the more often intentional behaviour tends not to achieve its object, or has other, unintended consequences,

or is aimed at something other than reproductive success (and these are surely significant phenomena through most of human history), then the more space there is for selection through differential reproduction (assuming, of course, that this selection is not subverted by diffusion).

In the absence of some sort of intentional or non-intentional selection of reproduction-enhancing traits (or of traits, such as improved productive techniques, that could have reproduction-enhancing effects), we should perhaps expect a random cultural 'drift', the relative incidence of reproductively advantageous traits showing no systematic tendency to increase and there should be no long-term tendency for the rate of population growth to rise, perhaps no long-term tendency even to non-accelerating population growth.

I conclude that, if there has been a process of increasing reproductive fitness, then the selection of varying cultural traits through a process of differential reproductive success is the most important (though not necessarily the only) reason for this tendency. I further conclude that there must be enough of a bias towards cultural inheritance within reproductive lineages (however they are conceived) rather than between reproductive lineages, or the fitness differential must sometimes be significant enough, to ground this quasi-Darwinian process.

A quasi-Darwinian historical materialism

Historical materialism, more or less as presented and defended by Cohen (1978; 1988, 3–106), claims that the level and kind of productive power explains social forms; and that historical changes (and cross-cultural variations) in social forms are largely explained by a persistent tendency for more developed productive techniques to replace less developed productive techniques within varying natural circumstances (physical geography, climate and ecology). These historical materialist explanations, Cohen argues, are (partly) functional or consequence explanations, in which the rise and persistence of social forms are explained by their effect in allowing or encouraging productive improvement at particular levels of productive development. The decline of social forms, conversely, is explained by their (comparative) failure in allowing or encouraging such productive improvement.

This (what we could call) basic historical materialism omits some important themes of orthodox historical materialism, notably the claims that there is a predictable direction to *social* development as well as to productive development and that this social development has been and will be brought about largely by class struggle. It seems to me

that these claims, while not incompatible with basic historical materialism and with each other, are logically independent. Even without these two claims, however, historical materialism remains a theory of considerable ambition.

Historical materialists must provide reasons for granting an explanatory primacy to productive power and for postulating this connected tendency to productive improvement. Insofar as they wish to maintain (or establish) historical materialism as a general theory of history, their reasons must be based upon fundamental characteristics of human existence rather than historically transient features of particular social forms. On the basis of these reasons, the proposed tendency must be strong enough to overcome likely social obstacles or countervailing tendencies.⁵ Ideally, the reasons underpinning the tendency should be such that they suggest a mechanism to demonstrate *how* the productivity-enhancing consequences of particular social forms explain the spread of those social forms, this being important to the functional construal of historical materialist explanations.

Darwinian natural selection possesses a mechanism to ensure the spread of more adaptive traits: all else being equal, inherited traits that enhance the reproductive success of their bearers will spread in successive generations of a population *because* they enhance the reproductive success of their bearers relative to less adaptive variants. In natural selection, of course, 'more adaptive' is *defined* as reproductively advantageous and reproductively advantageous traits will spread *through* their effect on reproductive success. For historical materialism, by contrast, more adaptive social forms are those that are, as it were, productively advantageous and this does not provide an obvious mechanism to ensure the spread of such social forms, at least in non-market economies. After all, while inherited variations that enhance reproductive success are likely to become increasingly common in successive generations, it is not so evident that social forms that enhance productive power will spread *through* their effect on productive power, or even *because* they enhance productive power. One of the purposes of this essay is to provide, at least in outline, a mechanism to repair this gap in historical materialist explanations.

Now, the power deployed in production, the ability to produce essential physical resources (water, food, clothing, shelter, the tools needed to produce each of these and so on), is surely one of the important cultural variables influencing rates of survival and reproduction. The greater the used productive power, the greater the likely, or at least possible, rates of survival and reproductive success. Crudely, more water, food, clothing,

shelter and so on, produced per unit labour input or per person can be transformed into more surviving offspring. Moreover, if cultural variables generally are subject to the quasi-Darwinian process outlined above, then this should apply *inter alia* to productive techniques. To the extent that offspring adopt (and sometimes alter, for better or for worse) the productive techniques of their parents (or their parental group), then differential reproductive success will ensure that improved productive techniques will tend to spread. Other things being equal, those that adopt superior productive techniques will thereby improve their relative rates of survival and reproductive success, thus spreading the productive techniques that enhanced their reproductive success. Conversely, those that do not adopt superior productive techniques will thereby worsen their relative rates of survival and reproductive success and their inferior productive techniques will gradually disappear. (The selection involved in this situation would be intensified by a *direct* competition for resources, though the argument does not presuppose such competition.)

If improved productive powers do lead to increased reproductive success, then this will give rise to a persistent reproductive bias in favour of the spread of improved productive powers. The stronger this bias is, the more likely it is, over time, to overcome any cultural diffusion between the units of selection entailed by people's, not unlimited, freedom to choose the cultural traits they adopt. There will result an aggregate and cumulative tendency for the productive power of human populations to rise (and an associated tendency to accelerating population growth) as improved productive techniques are transmitted from generation to generation.

Some cultural traits (such as economic structures and other social and political variables) are likely to influence survival and reproduction *through* their effect upon used productive power. However, to adopt a formulation of Joshua Cohen's (1982, 258), they will be 'differentially capable of advancing the growth of productive forces'. All else being equal, those that 'inherit' or develop social traits that allow or bring about the development of used productive power will reproduce more successfully than those that 'inherit' or develop social traits that hinder that development. Again, the stronger, more persistent this reproductive bias is, the more likely it is, over time, to overcome the resistance of conservative social forms, though not necessarily without social and political conflict.

But an argument of this form is not enough to establish an explanatory primacy of productive power, even over those social traits that

affect productive power, let alone an explanatory primacy of productive power over social *forms*. The most that has been established is that *if* improved productive powers enhance survival and reproduction then, given certain other assumptions, improved productive powers and the socio-cultural variables that allow or encourage productive development, will, because of (and perhaps through) their effect on survival and reproduction, tend to spread in successive generations and there will be a tendency for productive power to improve historically. But this conditional thesis makes no claim as to *how* influential productive powers are, relative to other cultural or social phenomena, in setting rates of survival and reproductive success. After all, other cultural variables that enhance reproductive success independently of productive power will also be selected. Moreover, given that it is their effect on reproductive success that explains which characteristics are selected, this seems to (and in fact does) assign a more important (functional) explanatory role to reproductive success than to productive power, an explanatory role that any quasi-Darwinian historical materialism must concede.

One response to this would be to claim that *most* of the variation in survival and reproductive success is explained by variation in productive power and that developments in productive power are the major determinants of improvements in rates of survival and reproduction. This does establish an important (functional) explanatory role for productive power in relation to those social phenomena that affect productive power, albeit a role secondary to that of reproductive success. But this claim does not, or at least not directly, establish an explanatory *primacy* of productive power. Varying productive techniques are here merely the raw material, albeit the most important raw material, for selection through differential reproductive success and this still assigns a more important (functional) explanatory role to reproductive success, though one that, to repeat, quasi-Darwinian historical materialists must accept.

In order to establish an explanatory primacy of productive power, I must return to the claim of the quasi-Darwinian theory of history outlined above, that those cultural traits (including varying productive techniques) that enhance reproductive success will be the cultural traits that are selected.⁶ However and crucially, this does not tell us what determines *which* cultural variables would enhance reproductive success. A quasi-Darwinian historical materialism must claim that it is the level and kind of productive power already achieved that (largely) determines which characteristics would increase reproductive success.

Putting both of these propositions together gives the following explanatory schema: the existing level and kind of productive power

explains which characteristics would enhance reproductive success and those characteristics that would enhance reproductive success are the characteristics selected. From this, given the transitivity of explanation, I can derive the claim that the existing level and kind of productive power explains the cultural traits that are selected. This sustains an explanatory primacy of productive power, though in a historical materialism that has been given a quasi-Darwinian elaboration.

This schema can reconcile the respective explanatory roles of reproductive success and productive power in a quasi-Darwinian historical materialism. It enables me to specify in what sense the level and kind of productive power explains the social characteristics selected and in what sense their effects on reproductive success explain the social characteristics selected. (The former explanation claim is what makes the theory historical materialist, the latter is what makes it, more or less, Darwinian.)

So, productive power exerts its explanatory role by determining which characteristics would enhance reproductive success and which are, therefore, selected. This selection can occur in two ways: either the relevant characteristics differentially *affect* productive power and affect reproductive success (and are thus selected or deselected) through their differential effect upon productive power; or the varying characteristics differentially *utilise* the existing level and kind of productive power (and therefore differentially affect reproductive success and are thus selected or deselected).

In the first kind of explanation, the existing level and kind of productive power determines the effect that varying traits will have on reproductive success because any given level and kind of productive power will have a disposition to be affected in different ways by variations in the relevant characteristics and the resulting variations in productive power will in turn differentially affect (directly or indirectly) reproductive success.

Explanations of this sort, of work relations, economic structures and superstructural and ideological phenomena, are relatively familiar and I briefly referred to them above. As an illustration, let us suppose that the level of productive power in an agricultural population is such that it is productively advantageous (and therefore reproductively advantageous) to construct and maintain large-scale irrigation systems. This can occur, however, only to the extent that the producers increase the time and energy that they devote to production. Coercion increases the extent to which the producers will do this and an hierarchical society can exert a greater degree of coercion than an egalitarian society. The improved

productive power and, consequently, reproductive success of those groups that happen to have somewhat less egalitarian social structures, should lead to the spread of more hierarchical social structures within that population. Otherwise similar agricultural populations, whose level and kind of productive power make it impossible or not worthwhile to construct such irrigation systems, may continue to enjoy more egalitarian social structures, but at lower levels of productive power and reproductive success. With reproductively more successful neighbouring populations, this may put their long-term survival in doubt.

In the second kind of explanation, the level and kind of productive power determines which cultural variations would enhance reproductive success because different cultural traits will utilise the existing level and kind of productive power unequally (and therefore differentially affect reproductive success). Explanations of this kind are obviously applicable to those characteristics that affect reproductive success more directly than does productive power.

To illustrate this kind of explanation using a very simple example, let us take the birth rate of a foraging population. The number of offspring per couple that most enhances reproductive success is the offspring number that is selected. But which number of offspring *would* most enhance reproductive success is determined by the level of foraging efficiency (too few, given the resources produced and fitness is not maximised; too many and they starve and fitness is not maximised). So, the fact that the average number of offspring per couple in a particular foraging population is, say, two is explained (through a selective process) by the average foraging efficiency of that population. A foraging population with a lower foraging efficiency would, *because* it has a lower efficiency, have a lower number of offspring per couple.

As long as variations in reproductive success are explained in one of these two ways, then the existing level and kind of productive power standardly determines which social characteristics would enhance reproductive success. So, differential reproductive success selects those characteristics (especially productive techniques) that, given the level and kind of productive power already achieved, enhance reproductive success. There is thus a persistent tendency for characteristics (especially productive techniques) that are reproductively advantageous to replace characteristics that are reproductively less advantageous.

Changes in social structure, therefore, are explained by changes (standardly improvements) in the level and kind of productive power, which changes are explained by their propensity to enhance reproductive success, given the existing level and kind of productive power. Thus those

social forms that allow or encourage productive improvement spread primarily *because* they allow or encourage productive improvement and thereby enhance reproductive success.

It is important to realize that the part played in this quasi-Darwinian historical materialism by the level and kind of productive power is analogous to the part played in a straightforwardly Darwinian explanation by the environment, or, rather, by the relationship between the organisms and their natural environment. The level and kind of productive power must be conceived, therefore, as an aspect of the relationship between people and their natural environment (cf. Cohen 1978, 96–8). Its emphasis upon this aspect of the relationship between the relevant organisms and their environment distinguishes a quasi-Darwinian historical materialism from a quasi-Darwinian theory of history. Both of these are distinguished from Darwinism proper by their reliance upon an intellectual generation and cultural transmission of the selected (or deselected) variations.

The tendency for reproductive success to increase, given differential reproductive success and certain other assumptions, is inherent in the human situation and is the fundamental tendency of human history for a quasi-Darwinian theory of history. However, a quasi-Darwinian historical materialist would add, this tendency depends for its realization upon a growth of productive power. It is the possibilities for productive development set by the relationship between people and their environment that decide *whether* the tendency for growing productive power and, therefore, the tendency for increasing reproductive success, are realized; the *rate* at which productive power and, therefore, reproductive success can increase; and the *direction* in which productive power develops and, therefore, the direction of social development. Natural conditions can, therefore, and unlike social conditions, indefinitely prevent the realization of these tendencies to increasing reproductive success and productive improvement. This is recognizably a version of historical materialism, but it is now underpinned by a quasi-Darwinian process.

Of course, intentional behaviour and 'rational choice' may sometimes be sufficient to ensure the adoption of superior productive powers, or of relations of production that favour the use of superior productive powers, without the operation of a selective process. But this cannot be assumed to be the general case (Cohen 1978, 153–5; Cohen 1982; Cohen 1988, 26; Cohen and Kymlicka, 1988; Levine and Wright, 1980). Where intentionality fails to generate productive progress, perhaps because of the gap between individual rationality and collective needs, because of a class-specific interest in productive stagnation, or, more

likely, because of limited knowledge and imperfect rationality, the selective mechanism I have outlined should introduce a strong bias in favour of the development of productive power. At the very least, therefore, intentional explanations need the support of selective explanations in historical materialism.

Whatever its problems and unorthodox implications, my argument is not, I suspect, so distant from the way in which Marx and Engels conceived their theory. The most common argument they used to support the basic claims of historical materialism was that human beings must produce in order to live, that they cannot live on politics, religion, or military conquest. Marx and Engels emphasize the importance of production for survival in conditions of scarcity, the implied alternative being death. The argument as it stands has been effectively criticized by Cohen (1988, 124–31), though he does allow that it might be repaired if provided with appropriate supplementation.

I think that Marx and Engels' argument is defensible if reconstructed in the Darwinian way that I have suggested. In my view, the argument begins to make sense if taken as involving selection through differential physical survival: those that improved their survival rate through improving their productive power would come to predominate. Darwin, too, tended to present the theory of natural selection (as opposed to sexual selection) in terms of the stark alternatives of survival or destruction, arguing from the 'Malthusian' premiss that more offspring are born than could possibly survive, with reproduction treated as a concomitant of survival (1859, 5, 61, 80–1, 88, 126–7, 156–7, 194; 1871, vol. I, 278).

Modern Darwinism, however, is formulated more in terms of differential reproductive success. What is more, though this is less often realized, Darwinism can relegate the Malthusian premiss to, at most, an implication of natural selection, given certain other assumptions, rather than part of the deductive core of the theory (Fisher 1930, 43–4). In my view, rather than entirely abandon the traditional argument for historical materialism, it would be better to improve it by making explicit the premiss of differential survival and then follow the modern Darwinian practice of shifting the emphasis from differential survival to differential reproductive success.

In fact, Marx does occasionally use something like this argument in attempting to justify the basic claims of historical materialism. He claims that production is not simply a matter of *maintaining* life, but of producing life. For instance, in the *German Ideology* (1845–46, 28–9, see

also 18, 39) Marx and Engels argue that

we must begin by stating the first premiss of all human existence and, therefore, of all history, the premiss, namely, that men must be in a position to live in order to be able to 'make history'. But life involves before everything else eating and drinking, a habitation, clothing and many other things. The first historical act is thus the production of the means to satisfy these needs, the production of material life itself. And indeed this is an historical act, a fundamental condition of all history, which today, as thousands of years ago, must daily and hourly be fulfilled merely in order to sustain human life ... The second point is that the satisfaction of the first need (the action of satisfying and the instrument of satisfaction which has been acquired) leads to new needs; and this production of new needs is the first historical act.... The third circumstance, which, from the very outset, enters into historical development, is that men, who daily remake their own life, begin to make other men, to propagate their kind.... The production of life, both of one's own in labour and of fresh life in procreation, now appears as a double relationship: on the one hand as a natural, on the other as a social relationship.

This is echoed in the 1859 'Preface', which begins by referring to 'the social production of their life' and goes on to claim that the 'mode of production of material life conditions the social, political and intellectual life process in general' (Marx 1859, 141–2). I think that Marx is speaking more literally here than has been realized. He is more explicit in Volume III of *Capital* (1894, 157):

Just as the savage must wrestle with Nature to satisfy his wants, to maintain and reproduce life, so must civilised man and he must do so in all social formations and under all possible modes of production.

In *The Descent of Man* (1871, vol. I, 159) Darwin, too, made remarks that perhaps provide support for some of what I have been saying:

The tribes which included the largest number of men thus endowed [with superior intellectual faculties, PN] would increase in number and supplant other tribes. Numbers depend primarily on the means of subsistence and this, partly on the physical nature of the country, but in a much higher degree on the arts which are there practised.

Darwin is talking here about the selection of inherited intellectual capacities in human evolution, the improvement of which, he says, explains the development of the arts of subsistence. But his view that 'numbers depend primarily on the means of subsistence' is close to my claim that variations in rates of reproductive success are largely determined by variations in used productive powers.

Some other difficulties for the theory

I have already mentioned the problems of intentionality and diffusion posed for a quasi-Darwinian historical materialism by human intellectual and cultural capacities. Here I want to briefly advert to some other difficulties the theory faces.

The claims that most variations in survival and reproduction are explained by variations in used productive powers and that (therefore) the existing level and kind of productive power determines which social characteristics would enhance survival and reproductive success, are contingent, empirical claims, they are not written into human history. However likely it might seem (at least to historical materialists) that most other cultural variables would affect rates of survival and reproduction less than do used productive powers, there are cultural traits that could rival productive power in this respect. One particularly notable candidate is the level of military power.

Military power is a potentially important determinant of differential reproductive success in that superior military power can, at least, enhance relative, if not absolute, rates of survival and reproduction by lowering the rates of survival and, therefore, reproductive success of competitors through warfare. This perhaps suggests a tendency to increasing military power analogous to the tendency to increasing productive power, though perhaps under a more restricted set of conditions.

Warfare may or may not occur in all societies, but even if it does occur it is claiming a great deal to say that it is as ubiquitous and therefore possibly as influential upon survival and reproduction, as is production. Note that I am not claiming that the use of military power takes up too little time or energy, compared to production, to be as important a force in human society and history. According to the quasi-Darwinian theory of history outlined above, it is not the time or energy devoted to it that determines the historical influence of any variable,⁷ but its effect, relative to other variables, upon rates of survival and reproduction, and its (consequent) role in determining which characteristics would enhance reproductive success. My point, therefore, is the less simple one that the

persistent effect of used productive power upon rates of survival and reproduction is likely to considerably outweigh, over the long-term, the more occasional and irregular effects of used military power and that, therefore, the former is likely to have a greater selective influence upon social and cultural phenomena than the latter.

Despite my scepticism concerning the relative influence on survival and reproduction of selective forces other than productive power, however, I do acknowledge that other forces can have important effects on reproductive success, effects that might at times outweigh those of used productive power. However, just as the growth of populations at an increasing rate would be evidence for a tendency towards the spread of reproductively advantageous traits in human history, so if human populations have tended to grow at an increasing rate *and* if productive power has developed more or less concurrently, this would be *prima facie* evidence that productive power is *a*, perhaps *the*, major determinant of variations in survival and reproduction, and that, insofar as social forms *affect* productive power and reproductive success, they have changed so as to *enhance* productive power and reproductive success.

These tendencies would not, of course, be *decisive* evidence for the theory presented here, but, equally, their non-fulfilment would not decisively falsify it, any more than stationary or declining organic populations falsify the theory of natural selection (though both theories need to account for these tendencies, perhaps by reference to other, countervailing, environmental circumstances, or evolutionary/historical tendencies). Incidentally, stagnation or decline in human populations and productive powers would at least show that productive progress and (accelerating) population increase cannot be taken for granted as more or less automatic consequences of human physical and intellectual capacities, little influenced by environmental circumstances and social forms and, therefore, largely unexplained by environmental circumstances and of little (functional) explanatory import for social forms. Occasional stagnation and regression (and even the extinction of local populations), against a background of general (but unequal) progress, would demonstrate that natural and social circumstances do profoundly affect reproductive success and productive development, *and* that, insofar as environmental circumstances allow, social circumstances change so as to enhance reproductive success and productive power.

Clearly, tendencies to improving productive power and accelerating population growth depend upon favourable, or at least not unfavourable, natural circumstances and are anyway subject to physical limits. But there is a good chance that they will often be realized in human history

given the relatively rapid rate of human cultural innovation compared to the slow rate of environmental change and the consequent possibility that the (non-intentional) selection of improved productive powers will also be relatively rapid. Moreover, any natural selection of cultural variation can, of course, be accelerated by an intentional, 'artificial' selection; an artificial selection likely to be given added impetus by the incentive to adapt provided by an underlying process of non-intentional selection. Within limits, human beings should, more than other species, be able to escape the Red Queen effect of improved adaptive traits without improved rates of reproduction (Dawkins 1988, 182–4), and actually increase their rates of reproductive success together with their productive powers.

A theory of this ambition raises an enormous number of issues and it is far from obvious how it could be tested more rigorously than the evidence from long-term historical tendencies allows. One possibly disconfirming counter-example, however, would be that in the modern world those societies that are productively least developed seem to be those that have the greatest reproductive 'success', while the most productively developed societies are those that have also undergone the demographic transition and whose reproductive rates tend to be very low, sometimes below the replacement level of the population. The cultural transmission of the relevant characteristics also raises the possibility of reproductively less successful social forms that are 'parasitic' upon reproductively more successful social forms. For example, unhealthy, reproductively disadvantageous urban centres could survive and even grow on the basis of migration from reproductively more successful rural areas (though there are limits to this sort of process). At the moment I can do little more than acknowledge that these are problems for the theory presented here.

Conclusion

One of Marx's published and presumably, therefore, most considered, comments on Darwin appears in Volume I of *Capital* (1867, 493 fn 4):

Darwin has directed attention to the history of natural technology, i.e. the formation of the organs of plants and animals, which serve as the instruments of production for sustaining their life. Does not the history of the productive organs of man in society, of organs that are the material basis of every particular organization of society, deserve equal attention? ... Technology reveals the active relation of man to nature, the direct process of the production of his life and thereby it

also lays bare the process of the production of the social relations of his life and of the mental conceptions that flow from those relations.

It is implausible to read this passage as other than an outline, in simple terms, of what Marx regards as the similar explanatory structures of historical materialism and Darwinian natural selection. Marx sees natural selection as explaining 'the formation of the organs of plants and animals' through their role in 'sustaining their life'. He goes on to imply, in analogy, that 'the direct process of the production of [human] life', presumably *because* it involves the 'production' of life, explains 'the social relations of [human] life and... the mental conceptions that flow from those relations'. This supports my view that Marx either subsumed reproduction under 'sustaining' or 'producing' life, or took reproduction for granted as an obvious consequence and correlate of human survival.

I like to think that the Marx who wrote this would not have been unsympathetic to the ideas outlined in this essay. After all, what reason is there for making production central to any theory of human history, other than its contribution to the survival and reproduction of human beings?

Notes

1. In memory of my mother, Monica Williams (1930–90), socialist and feminist.
2. All general claims regarding the tendencies postulated by natural selection, historical materialism and analogous processes assume clauses asserting that the appropriate conditions are present and that the postulated forces are not (entirely) neutralised by countervailing evolutionary or historical forces.
3. This claim assumes that natural selection is not confounded by other, non-selective evolutionary forces, such as drift and mutation. Moreover, situations of frequency dependent selection may not lead to an increase in fitness (Levine and Sober 1985, 308; cf. Sober 1984, 172–88). These situations may be relatively common and this may have implications for the argument developed in this essay, but not, I think, disastrous implications.
4. Though, as I have already pointed out, all predictions of this sort are subject to very important qualifications. Rather than that such tendencies could be *predicted* by the operation of such a process, it would perhaps be better to say that they could be *explained* thereby.
5. See Cohen (1978, 88–114; 1988, 83–106, 155–79) for the meaning of 'social' here and the implications of the distinction between social and material phenomena for historical materialist explanations.
6. The following explanatory schema maintains the structure of that developed for historical materialism by Cohen (1978, 160–3; 1983, 201–3; 1986, 219–22; 1988, 10–11), while changing some of the terms involved.
7. Cohen (1988, 125) perhaps makes this assumption (but see also 170).

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5

Analytical Marxism and the Debate on Social Evolution

Alan Carling

History and evolution

According to Erik Wright, Andrew Levine and Elliott Sober (1992, 50) a theory counts as historical only when it has built into it 'the idea of *direction*'. Both Darwinism and classical historical materialism are in their view genuinely historical theories: Darwinism because it posits (in the words of one authority) that 'any population (with the properties of multiplication, heredity and variation) will evolve by natural selection so as to become better adapted to its environment' (Smith 1975, 96); Marxism likewise because it portrays societies as developing so as to improve their forces of production.

Care is nevertheless required to identify exactly where and how the 'idea of direction' figures in an evolutionary theory. To see this, compare the natural histories of the giraffe and the elephant. Assume an initial environment containing acacia trees, populated with giraffe-like mammals capable of reproducing themselves and passing on some of their genetic characteristics to their offspring (multiplication and heredity). Assume moreover that chance variations ensure that there will always be some giraffes with longer necks than the average giraffe (variation). The giraffes with slightly longer necks will then tend to propagate slightly more effectively than giraffes with slightly shorter necks, passing on this trait to subsequent generations (natural selection). Thus we can be fairly sure that the effect of the environment will be to slowly draw out the neck of the giraffe, as if the environment were a causal agent in its own right. In this case, we can say with Cohen (1982, 47) 'that the environment, in virtue of its dispositional characteristic (to favour long-necked giraffes) causes the appearance of the adaptive feature (an ever-longer neck) at the species level'.

But now ponder the elephant. The remote ancestors of the elephant – members of the genus *Moeritherium* – were two-foot tall piggish creatures which grubbed about in the soil using their lower jaws as shovels. This dental structure was subject to ‘a progressive and extreme lengthening’, but only up to the point at which its function began to be taken over by the beginnings of the elephant’s fleshy trunk. At this juncture, evolution performed a U-turn, and the lower jaw started to shrink back into the skull (this is in marked contrast to the horse – a herbivore in which the jaw-line continued to extend) (Smith 1975, 274–8). While it was thus true that the elephant was continually improving its fitness with respect to its environment, it was not true that this occurred because one particular characteristic of the animal – its lower jaw – was developing in one constant direction. Evolution was served first by an extension, and then by a retraction of the lower jaw. It follows that Darwinian evolutionary theory in its most general form does not predict anything about the direction of development of particular biological traits.

To fix these distinctions, I will call an explanation *directed* whenever it tries to explain the particular direction of historical (or biological) development. We rule that an undirected explanation lacks direction because it does not seek to *explain* the direction of development, even if what it explains does have a direction.¹

In addition to this contrast, explanations differ in the range of their explanatory ambitions – special theories are limited to one or a relatively few cases of development, general theories aspire to comprehend all or relatively many cases. The main factor that limits the generality of an evolutionary theory is the assumptions it makes about the prior existence of species – a theory which explains why the elephant was likely to evolve from *Moeritherium* is less general than a theory which claims to explain why the elephant was likely to evolve from the first organic molecule.²

These classifications make available four brands of evolutionary theory: undirected and special; undirected and general; directed and special; and directed and general. Darwinian theory works by coupling a general and undirected model of evolution – the model of natural selection – with special, and sometimes directed, theories of particular transitions. Thus, the story of the giraffe conforms to the general model, but the application of the general model which predicts a lengthening neck depends on a special assumption about the prior existence of a proto-giraffe which would be prone to a lengthening neck under favourable environmental circumstances. In general, then, in biology, and contrary

to the impression given by Cohen that evolutionary explanation is always directed explanation, the motto is 'see what has worked and then explain it by its working'.³ To discover if the analogy between Darwinian and Marxian evolutionary theory is sound, it will evidently be necessary to establish where to place the Marxian theory of history according to this classification.

What sort of evolutionary theory is the Marxian theory of history?

The answer revolves around the type of explanatory significance we accord to the direction history receives from the development of the forces of production. In the most ambitious case, which seems to be the case argued increasingly clearly by Gerry Cohen over recent years, the main task of the theory of history is to explain why history has the overall direction it has (given that it has an overall direction). Moreover, the arguments Cohen marshalls to this end are of generous proportion – they are explicitly extra-historical arguments intended to gain purchase across the bulk of actual historical development. It follows that the theory of history in Cohen's hands is significantly more ambitious even than Darwinian theory, because it is expected to deliver directed as well as general explanations of historical phenomena.

It is worth noticing why a Marxist – at least an orthodox Marxist – would wish the theory of history to assume this ambitious form. If history has a direction that can be explained in extra-historical terms, then history is explicable as a necessary (or likely or normal) development towards the goal which lies at the end of the direction history has. If this goal can be identified with socialism, then history will normally develop towards socialism, which is what Marxists have normally wanted to believe.⁴ The crux of Cohen's defence of a directed general theory lies in his defence of what he now calls the Full Development Thesis, to wit: 'there is an autonomous tendency for the productive forces to develop' (Cohen and Kymlicka 1988, 172). That the forces of production have a tendency to develop means two things about them: first that there is an observable historical trend which 'normally fulfil(s)' the tendency (although the tendency need not be fulfilled on every occasion) and second that the cause of the development is relatively systematic – the historical tendency cannot occur simply for a 'miscellany of reasons' (ibid. 174/5).

That the tendency mentioned in the Full Development Thesis is an *autonomous* tendency means that its explanation is 'rooted ... in

fundamental material facts of human nature and the human situation' (ibid. 172) In particular, the tendency must be explicable without reference to social facts – an expression which in Cohen's lexicon entails facts about rights and power relations, especially those associated with the social relations of production (whose social character stands opposed to the material character of the forces of production). Cohen made this stipulation of autonomy in the tendency explicit in order to protect his argument against two related sets of objections made by Andrew Levine and Erik Wright (1989 [1980]) and by Joshua Cohen (1982).

If the tendency were not autonomous of social structure, then it would be partly or largely caused by social structure, which lays the argument open to the empirical objection that unpropitious social structures might systematically block the development of the forces and thence frustrate the transition to more amenable structures. Feudal relations of production might for example drastically inhibit or almost extinguish material development and, because of the causal influence over the historical process attributed to social factors, they might also prove powerful enough to prevent the rise of the capitalist relations which would have rescued the forces from their sluggishness. If the supposed tendency to development were liable to remain unfulfilled in such a case, it could hardly count as a tendency and the Development Thesis must be false. Hence the need to formulate the Thesis in its Full (that is, asocial) version.

Cohen's sensitivity to the undue influence of the relations of production arises from his desire to defend the explanatory primacy of the forces over the relations, and this becomes a sensitiveness to the formulation of the Development Thesis because of the way in which he uses the Development Thesis to establish the Primacy Thesis. The argument goes as follows: if it is the case that there is a tendency for the forces of production to develop (Development Thesis), then it must be the case that relations of production have regularly adapted to facilitate the development of the forces (Primacy Thesis). In other words, the fact that relations characteristically have the capacity to stand in the way of forces, coupled with the fact that forces have not been systematically impeded, implies that relations must have been selected so as not to stand in the way of forces. It must then be true, as is said in Cohen and Kymlicka's most recent statement of The Primacy Thesis that 'the nature of the production relations of a society is explained by the level of development of its productive forces' (1988, 172).⁵

The fact that the Primacy Thesis is now derived from the Development Thesis entails a significant shift in the burden of explanation.

What ultimately explains a given configuration of forces and relations is now whatever explains the tendency of the forces to develop. I note for future reference that there may be an accompanying shift in the type of the ultimate explanation. The adaptation of the relations to the forces has a functional character, but what ultimately causes the adaptation to occur need no longer cause it functionally. This shows that although functional explanation is an intrinsic component of Cohen's theory, it is not necessarily the fundamental component. It is no longer necessarily the case that, as claimed in Cohen (1989 [1982], 92), 'the main explanatory theses of historical materialism are functional explanations'.

Joshua Cohen's logical challenge to the theory also derives from the relationship between the Development Thesis and the Primacy Thesis. He says that if the relations enter in any way into the explanation of the tendency of the forces to develop, then there will be circularity in the attempt to explain the configuration of relations-with-forces by appealing to the existence of the tendency. Gerry Cohen in effect accepts the cogency of this challenge by rephrasing the Development Thesis to make absolutely clear that its explanation must indeed be independent of (autonomous from) the relations of production. 'The [KMTH] argument ... den[ies] ... that relations constitute any part of the ultimate reason why development tends to occur' (Cohen and Kymlicka 1988, 179).⁶

To summarise: if the explanation of the tendency has the autonomy asserted in the Full Development Thesis, it *is not* troubled by the empirical objection entered by Levine and Wright, and it *must have* such autonomy in order to survive the logical objection entered by Joshua Cohen. The autonomy of the tendency, therefore, becomes essential to Cohen's formulation of historical materialism and he is accordingly driven to find asocial explanations for the existence of the tendency.

The asocial argument for the tendency

The asocial argument is rooted in one fact of human nature – rationality – and one of the human condition – scarcity. These comprise the 'historical situation of humanity' (Cohen and Kymlicka 1988, 173): a situation which is historical in the sense of being constant throughout the relevant stretches of historical time, and extra-historical in the sense of not being subject to historical change during that period. Scarcity gives humanity the incentive to improve the forces of production and rationality (sometimes in the company of 'intelligence' or 'innovative' behaviour (179)) gives humanity the means. These impulses win through often

enough against recalcitrant relations of production, competing human interests and awkward superstructural problems to vindicate the Full Development Thesis.

Since this asocial explanation abstracts from the forms taken by the evolving relations of production and is, nevertheless, intended to apply across the historical divisions created by their succession, Cohen's attachment is confirmed to a theory of historical transition which is general, as well as directed. In response to criticism Cohen has however clarified the manner in which he supposes that persons in the historical situation act so as to improve the forces of production. It is a mistake, he says, to entertain the idea 'unintentionally suggested by *KMTH*' that 'the agents who actually introduce better forces do so in order that their own burden of labor will be lightened' (175). The agents do not act directly on the forces of production. 'Instead, the claim is that, being rational, people retain and reject relations of production according as the latter do and do not allow productive improvement to continue' (178). People thus pursue the indirect strategy of acting on the relations of production in order to achieve the desired effect on the forces of production.

The motive for citing the indirect strategy is obvious enough: if people acted directly on the forces from their extra-historical vantage point, the explanation of historical change would by-pass the relations of production altogether. This would effectively deny the relations the proximate influence Cohen agrees they have over the forces. So in order to preserve the relevance of the Primacy Thesis (and of the undeniable facts that motivated its functional formulation), it is necessary to upgrade the level at which rationality impinges, from the level of the forces to the level of the relations.

Yet this manner of allowing for the influence of the relations over the forces changes the manner in which the development of the forces explains the relations. In one sense, Cohen is offering what he called in *KMTH* a *purposive elaboration* of the functional explanation enshrined in the Primacy Thesis, since the asocial argument shows how it is that the character of the relations is explained by their effect on the forces. But it would be more accurate to say that Cohen is replacing a functional explanation of the relations with an intentional explanation: relations are as they are because an agent wished them to be so, even if the agent had the ulterior motive of wanting the relations to be that way only for the sake of the effect they would have on the forces. An intentional explanation does not become a functional explanation just because some larger purpose explains its governing intention. It is apt to call this

version of The Primacy Thesis *The Intentional Primacy Thesis*. The requisite priority of the forces over the relations is here given by the fact that the intention to improve the forces governs the intention to change the relations: it is a primacy *of one intention over another* in the consciousness of a relevant actor.

I said in the previous section that a consequence of Cohen deriving the Primacy Thesis from the Development Thesis was to displace functional explanation from the centre of the explanatory stage. Now we appreciate that his asocial argument for the Development Thesis drains the theory of functional content – the functional explanation has been elaborated out of sight.⁷ The substance of this non-functional argument is also less than impressive. Gerry Cohen rejects Joshua Cohen's view that an asocial account is necessarily 'enfeebled', and he may be right that it is not *necessarily* enfeebled. The more relevant point is nevertheless the feebleness of the substantive view he does appear to endorse in the response to Joshua Cohen. The strong impression is created that 'people' are in a historical position to 'retain or reject relations of production' by the exercise of either individual or collective will.⁸

It is true that there are some relations I can establish by unilateral volition, such as the relation of standing next to you. But this is not true of many other, perhaps the more significant, relations where important interests are at stake. Marriage is a relation, and I can choose to marry someone, but I cannot choose by myself to establish the relationship of marriage, because that requires a complementary choice on the part of the person I wish to marry. The relationship as such is not the object of choice; it is at best only the outcome of a set of choices. But the kind of choice that is required to establish, say, capitalist relations of production – which is the kind of thing Cohen's actors are required to do – requires an order of choice higher than either of these cases. To choose to marry a particular person is rather like choosing to enter the employ of a particular capitalist. To choose to establish capitalist relations is akin to the choice of the institution of marriage as a means of regulating relations between the sexes.

It is beyond credence that any individual (or group of individuals) would ever be in a historical position to *originate* institutions of this kind with reasonable foreknowledge of the consequences they will bring, and even if people are sometimes in a historical position to *impose* such institutions, this will not help Cohen's argument very much, because the process of imposition would have to be asocial (that is, independent of power relations) if it were to assist in shoring up Cohen's argument.⁹ Not only is it massively implausible, to put it

mildly, that such transformations could occur in asocial fashion, without reference to the relative powers of those pressing the advantages of different kinds of institution (feudalism vs capitalism, monogamy vs polygamy); the insistence on asociality is inconsistent in Marxian applications with Cohen's programmatic claim to reserve a role for class struggle near the heart of the theory.

Scepticism about the Intentional Primacy Thesis is dramatically confirmed by the collapse of the Soviet social experiment after three-quarters of a century. It would be difficult to imagine an historical attempt to change relations of production in order to take advantage of the consequent improvements in the productive forces which began with a clearer conception of the end in view, and a greater commitment of political will, or a greater concentration of political power to achieve that end. Yet the experiment has failed, and it has done so in large measure because it proved beyond the power of the Soviet regime – and of the Marxist theory on which it relied – to predict and then install the kinds of social relations of production which could in fact as well as in theory provide a sustained impetus to improve the forces of production.¹⁰

I conclude that although Cohen is no doubt correct to think that the Development Thesis is only defensible in its Full version (the version which makes explicit the autonomy of the tendency of the forces to develop), the attempt to maintain the Full Development Thesis is a strategic blunder of the first water. This is in part because in Cohen's hands it no longer resembles a functional evolutionary theory of the type, ironically, that he has defended rather successfully in his methodological debates with Jon Elster.¹¹ At all events, the Full Development Thesis must go.

The Natural Primacy of the forces of production

If the Full Development Thesis goes, then so too does Cohen's defence of the Primacy of the Forces of Production: a defence which, as we have seen, derives the truth of the Primacy Thesis from the truth of the Full Development Thesis. If Marxist Theory is not to lose all claim to distinctiveness in historical explanation, the Primacy Thesis must therefore be resurrected in some other guise.¹² The resurrection will very likely involve (genuine) functional explanation, since it is very unlikely that any intentionalist alternative to Cohen's argument will survive the objections that proved fatal to Cohen's own version of the intentional argument. In this section and the next, I present two different

functional conceptions of Primacy, confirming thereby that Cohen's Full Development Thesis is not essential to historical materialism.¹³

One of the main worries about the use of functional explanation in the social sciences is the lack of an obvious general counterpart in the case of societies to the survival of a species. What does it mean for a society to survive, and, by extension, enhance its reproductive fitness?¹⁴ On the most basic level, a society cannot survive if its members (or bearers, as the Althusserians would say) cannot keep body and soul together. Societies which fail to meet this basic test will perish along with their members, and this gives rise to a plausible functional generalisation: if we observe institutions in society which ensure that the productivity of society rises above minimal survival level, then it is a reasonable inference that the existence of the institutions is explained by this function. The inference is reasonable because the implied counterfactual is plausible: if the institution did not exist, then neither would the society.¹⁵ There is a process it is natural to call *natural selection* which selects in favour of institutional developments which raise productivity to subsistence level in societies in the 'historical situation' of scarcity.

Suppose, for example, that the institution in question is co-operative labour in prehistoric and other autarchic small-scale societies. Then we will be warranted in inferring that the existence of co-operative work relations is explained by their productivity-enhancing effect, and we may be warranted in extending similar inferences to other features of the society which we judge to subserve co-operative work relations.¹⁶ In this way we might be able to explain a somewhat complex set of institutions of the society on the basis of Natural Primacy. In order for there to be viable co-operative work relations, for example, there will almost certainly need to be social relations of production in the strict sense, that is non-random assignments of powers over economic process and product to designated constellations of individuals. Non-random relations of production might be implemented, for example, when a pocket tyrant ordered everybody into their economic roles on pain of death. Yet we may wish to doubt whether such assignments could endure – there are *relations* of production, sure (because the assignments are non-random) but the relations are *unstable* in the light of a general hypothesis that economic assignments based on coercion alone will give rise to power struggles or other disruptive responses that vitiate the assignments. Since any economy organised by coercion alone will on this hypothesis collapse for political reasons, any viable society must have contrived what Marxists call a superstructure to stabilize its relations of production. Notice that the necessity for the existence of one of

the main elements of the general Marxian model of society – viz. the superstructure – is grounded here on a general assumption about human social life: about what would happen in the absence of a superstructure, given certain assumptions about human nature.

To say that there are general functional reasons for expecting superstructures to exist is not however to say very much about what superstructures are likely to contain: are there any general constraints on how a superstructure achieves its stabilizing effect? An important guide on this question is supplied by data on what superstructures do in fact contain. In the case of autarchic small-scale societies, for example, co-operative work relations are typically sustained by institutions of community, typically comprising ‘shared values and beliefs’ coupled with mechanisms of social sanction against norm-violating behaviour (Taylor 1982).

We might assume that the existence of ‘shared values and beliefs’ among the members of a community will act to subdue the power struggle that would destroy a society without norms. But if shared values can consistently have this effect, it becomes more plausible that the human condition includes a capacity to respond to moral claims, and to respect powers that conform to (some particular conception of) rights.¹⁷

If moral norms were universally efficacious, and could succeed in suppressing anti-social behaviour without further assistance, one would expect the superstructure to contain a rather ferocious apparatus for inculcating social values and beliefs, but no apparatus for policing and deterring norm-infringing activities. That one does find sanctions systems so frequently in operation supports the idea that human rationality has always led individuals to circumvent the collective norms, with the potentially disastrous consequences for communal life much canvassed in the literature concerned with rational choice and collective action.¹⁸

If neither sanctions alone nor moral values alone can resolve the problem of social order, it looks as if we have discovered at least something about the lineaments of the necessary superstructure: it must contain a moment of ideology alongside a moment of police activity.¹⁹ And if something like this story is true, then natural selection would explain why we observe these elements of community so commonly, and why those elements exist – societies which have proved unable to contrive this kind of general structure will have disappeared. Ostracism is, for example, a common practice of ultimate deterrent whose effectiveness is guaranteed by the circumstance which on this account gives rise to it – the inability of an individual to survive outside the community.

This gut materialism, if I may so term it, will apply for as long as the 'historical situation' of scarcity persists. It may be formulated as a second Primacy Thesis:

Natural Primacy Thesis. Part of the character of the relations of production and of their superstructure in every society in the historic situation of scarcity is explained by the subsistence level of the forces of production.

Natural Primacy yields a non-empty version of the Primacy Thesis which appears to be true. What gut materialism (allied to natural selection) cannot deliver is a type of explanation that discriminates among systems of production relations all of which meet the subsistence test. If we want that kind of explanation – an explanation of the *differentiation* that occurs in post-prehistoric history – the notion of selection must be extended to embrace social selection, so that the criterion of social reproduction must include the ability of a society to survive in an environment partly composed of other societies. It is this new situation which a third concept of Primacy – Competitive Primacy – is designed to address.

The Competitive Primacy of the forces of production

Primacy of the forces of production will certainly obtain when:

- (i) there has been a competition between two different systems of production relations with higher and lower levels of development of the forces of production
- and
- (ii) the differential in levels has caused the system with the higher level to prevail over the system with the lower level.

These are the conditions for what we call Competitive Primacy of the forces over the relations in the given society. Competitive primacy is incompatible with outcomes to the envisaged social competitions in which either (a) the inferior system ousts the superior system or (b) there is a stable outcome of stalemate, coexistence, mutual extinction or symbiosis between the two systems. The last possibility may make it difficult to say when the second criterion of Competitive Primacy has been fulfilled, because the prevalence of one system over another required for

it to be true does not require that the losing system be obliterated completely, and this raises the possibility that the relationship between the two systems is symbiotic.²⁰

The nature of the empirical judgements involved may be illustrated from the case of capitalist imperialism. In so far as capitalist relations supplant pre-capitalist relations of production in some peripheral economy, the second proposition is fulfilled (assuming that the causal conditions are also satisfied). The proposition would still be fulfilled if certain pre-capitalist relations remain in operation in the peripheral economy, but in a marginalised or interstitial economic role inessential to the operation of the capitalist part of the economy – on the periphery of the periphery, so to speak.

A more difficult case is that envisaged in, say, Rosa Luxemburg's theory of Imperialism, wherein the existence of a non-capitalist periphery is necessary to overcome the alleged inability of capitalism to maintain profitability from its internal resources.²¹ This is a situation of symbiosis which might be held to invalidate Competitive Primacy.

On the other hand, if the non-capitalist periphery were sufficiently subordinated to the dynamics of metropolitan capital, the maintenance of the periphery might be held to demonstrate the supremacy of capital – the more essential the periphery became to capitalism's survival, the more important it would be for capital to assume control of it. And if capital did assume such control as a result of its superior forces of production, then the existence even of an essential non-capitalist periphery might be consistent with Competitive Primacy.

Whatever the judgements in cases such as these, it is clear that Competitive Primacy is a falsifiable condition, giving rise to a *bona fide* empirical theory. The theory nevertheless refuses to legislate for circumstances in which either

- (i) there is competition between systems of production relations but no accompanying difference in their productive levels
or
- (ii) there is a significant differential in the productive levels of two systems of production relations but no significant competition between them.

Since the notion of Competitive Primacy only comes into play when the competition is joined between two systems of production unequal in their technological levels, the Competitive Primacy Thesis requires no ruling on the historical likelihood of such encounters. Thus, it could

be that the doctrine hardly applies to pre-capitalism, either because all pre-capitalist relations were at essentially the same low level of productive capacity, or because different pre-capitalist systems of relevantly dissimilar level were nevertheless so remote from each other geographically that their generally low level of development precluded sustained competitive engagement between them.

What the Competitive Primacy Thesis offers is an *undirected* version of the theory of history: it is analogous to the claim, for example, that if two species of significantly differing intelligence compete, then the species of higher intelligence will prevail. What it shrinks from claiming is, by analogy, (i) that a species will appear of higher intelligence than some existing species and (ii) that if a more intelligent species does appear, then the new species will necessarily threaten the ecological niche of the old species. The Thesis is deliberately less ambitious than what Cohen intends by the Primacy Thesis construed in the context of the Development Thesis, namely that the Primacy of forces over relations is tendentially true of all societies in the 'historic situation'.

The general argument in favour of Competitive Primacy is a straightforward one. It claims that superior forcehood confers a competitive edge on its associated production relations which is tendentially decisive: the edge tends to ensure that technically-superior relations prevail in competition with technically-inferior counterparts. The general argument has an economic and a political branch – more precisely, a market branch and a class/state branch. The market branch says that superior relations tend to prevail in free market competition, because 'the cheap prices of its commodities are the heavy artillery with which it batters down all Chinese walls' (Marx and Engels 1952[1848], 47). The class/state branch takes literally what Marx and Engels here treat metaphorically, in that possession of superior forces of production confers a decisive advantage in political and military competition on ruling classes that control them.²² This suggestion has at least the merit of installing the triad of market relations, class struggles and developments of productive force at the epicentre of a Marxian theory of history: market forces and class struggles implement the primacy of the productive forces, showing how it is that relations attached to superior forces are the ones that tend to prevail.²³

Notice first that while it is still (something about) forces of production that confers survival value on relations, the aspect of the forces that is relevant has changed, because the meaning of survival differs, as between natural and social selection. With natural selection, the forces need only live up to fundamental requirements of human nature,

whereas with social selection, the forces must live up to whatever standard is set by the social competition. This is why it is fallacious to think that the general argument that arguably served in the case of natural selection will serve equally well in the case of social selection.

Engels committed this fallacy of gut materialism when he said at the graveside of Marx that his friend's ideas followed from 'the simple fact... that mankind must first of all eat, drink, have shelter and clothing, before it can pursue politics, science, art, religion, etc.' It may follow from this fact that some of the 'the state institutions, the legal conceptions, art and even the ideas of religion' can be explained, as Engels and the Natural Primacy Thesis claim, by 'the production of the immediate material means of subsistence' via a process of natural selection. But it does not follow from the same simple fact that 'the state institutions etc. etc.' are explained *in general* by 'the degree of economic development attained by a given people' (Engels 1972, 603). For the second inference envisages a process of social selection whose outcome depends on more than the simple capacity of a society to satisfy the immediate needs for food, drink, shelter and clothing.

The point relates to a disanalogy between Darwinian and Marxian evolutionary theory. 'Reproductive advantage' in a Darwinian species does not denote any particular characteristic of the species: it describes whatever in the species confers survival value – in horses a long jaw and in elephants a short jaw. 'Productive advantage' of a system of production relations is on the other hand a (roughly quantifiable) characteristic of those relations ('degree of development' is Engels' phrase). The degree of development of the forces of production enjoys the same kind of relationship to relations of production as jaw length and neck length have to a biological species, and it must be shown why this particular characteristic confers survival value in each case.²⁴

Such a judgement will depend in turn on the character of the threat which the relations are thought to be facing and in particular whether the source of the threat is natural or social. It may be fortuitous, for example, that one aspect of the forces – a productivity at least as high as subsistence level – confers general survival value of their associated relations in the battle against nature while a completely different aspect of the forces – superiority to the forces of competing relations – generally promotes survival in the social battle against those other relations.

Here it is relevant to cite an oft-cited ambiguity in Primacy Theses. Cohen's latest statement of the Thesis (quoted above) says clearly that it is the *level* of the forces which explains relations, whereas there is an alternative conception that holds it to be their *propensity to develop* the

forces which explains the relations.²⁵ Each of the three Primacy Theses given above is available in two variants depending on which of the two underlined phrases qualifies the term ‘forces of production’. Which variant of the Thesis is preferred, then, depends partly on which Thesis is under discussion.

The argument for Natural Primacy depends so heavily on one particular level of the forces of production (that is subsistence level) that it makes little sense to reformulate it in terms of propensities to develop. Intentional Primacy, on the other hand, does not seem to make much sense if it is *not* formulated in terms of propensities. This is because actors are there regarded – rather implausibly – as choosing relations for the sake of consequent improvements to existing forces, and such a choice is determined by the differential propensities of relations to bring about improvements in the existing forces, not by the level of the existing forces.

It is slightly less obvious which is the appropriate explanatory variable in the third kind of Primacy Thesis – Competitive Primacy – but I think the functional form of the Thesis nevertheless tells in favour of the level as the appropriate variable. A system of relations prevails because it can deliver its existing productive power in either lower prices or superior political organization, not because it would be able to do so in the future as a result of its greater developmental potential.²⁶ The implication is that Competitive Primacy obtains when a system of relations of higher current level but lower potential level prevails over a system of lower current level and higher potential level (under the alternative variant of the Thesis such an eventuality would falsify Competitive Primacy).

An important case in point might be medieval Catalonia, whose nascent capitalism was arguably extinguished by a powerful Castilian state whose economic base Catalonia would have easily outstripped if its native capitalism had been allowed to flourish (Brenner 1985, 49, no. 81). According to this interpretation, primacy of the forces can entail that a developmental avenue is blocked that would lead to massive future improvements in the forces. This sounds like an embarrassment to historical materialism, but it is only an embarrassment to a directed historical materialism, one which seeks to explain why Catalonia must supersede Castile, and a directed conception is not here defended.

Is Competitive Primacy plausible in history?

The Competitive Primacy Thesis and the Intentional Primacy Thesis both offer general theories of history. The decisive advantage of the

general argument for the former over Cohen's general argument for the latter is that the argument for the former places agents in a conceivable historical situation whereas the argument for the latter does not. Under Competitive Primacy, agents are socially located, and acting to defend and/or extend their existing regimes of production.²⁷ This shows that an argument for a general theory of history need not be an asocial argument. On the contrary, technological determinism works in this instance by demonstrating why one constellation of forces and relations has available a social power superior to that of another constellation of forces and relations.²⁸

Competitive Primacy also makes conspicuously lower demands on the rationality of agents. It may be quite sufficient that agents simply seek to defend and/or extend their familiar systems because the systems are familiar, or because they naturally prefer their own systems for a host of diverse reasons connected with the way in which each system justifies itself to itself. If one system prevails over another because of its superior forces, no one need be aware that this is the reason for its success: victory might be ascribed instead to superior leadership, superior national character or superior religion. This is precisely why a functional form of explanation is likely to be the most appropriate for questions of fundamental historical change.

On the other hand, the general argument for Competitive Primacy is by no means conclusive. Superior forcehood confers at best the capacity for economic and political supremacy. Extra assumptions are required to convert this capacity for success into a reasonable assurance of success.²⁹ Some of the required assumptions are motivational: there are degrees in the aspiration for success in economic competition, and perhaps only capitalism exhibits this motivation in its highest degree (Cohen 1978, 79–81); there are degrees in the motivation for political conquest, and even if every regime can be assumed to wish to defend itself, not every regime will necessarily wish to expand at the expense of other regimes to the extent necessary to ensure the applicability of the Competitive Primacy Thesis.

In any case, competitive success depends on other factors than technical advantage. Maximising productivity in the economy does not necessarily maximise surplus available for political struggle. Culture and communications throw up many barriers to free trade after Chinese walls are taken down; political and military success does depend partly on leadership and luck or opportunism. It also depends upon scale – a large and lumbering Empire at a low technical level might nevertheless concentrate its forces sufficiently to overcome a small but nimble

competitor at a higher technical level. And although there is no doubt of the general correlation between economic and military technique – so that a backward economy cannot sustain advanced military forces indefinitely – history abounds with highly significant cases of imperfect correlation: Japan and modern Germany on the one hand; Iraq and the former Soviet Union on the other.

Again, it may be that chance factors play an important role. If the outcome of the Battle of Marathon had been different, or it had not started raining when the Spanish Armada entered the English Channel, then such contingencies at critical junctures might not just perturb the invariable course of history: they might start it down a wholly different track.³⁰

For two main kinds of reason, then, we may not be speaking of a *tendency* in history derived from Competitive Primacy. First, Competitive Primacy does not necessarily apply to all of history, and it may not even apply to very much of it, because it may not be that such competition as history exhibits is competition between societies at markedly different technical levels. Second, the outcome of competition remains significantly in doubt even when a technically-superior society is pitched against a technically-inferior one.

Perhaps all that can be said is that history exhibits a *bias* imparted by Competitive Primacy; a bias weaker than a tendency but considerably stronger than nothing at all.³¹ If this is so, then Competitive Primacy is the basis for a version of historical materialism that is *general but undirected*. It is the closest analogue in Marxism for the general model of Darwinian evolution. And neither is this quite the end of the theory of history. For, as we see next, Competitive Primacy can be supplemented by an account of the transition from feudalism to capitalism that is *directed, though special*.

The Feudal Fission thesis

The origin of capitalist relations of production from their feudal precursors has long been a puzzle in Marxist Theory, and never more so than in the mind of one of its most distinguished recent historians. Robert Brenner has made it a cornerstone of his argument about feudalism that feudal relations militated systematically against productive progress. But if that were the case, how could they give rise to capitalist relations marked above all by their propensity to encourage productive progress? I hope to set Brenner's mind at rest by defending

the following:

Feudal Fission Thesis. It was very probable that something like English agricultural capitalism would arise out of something like European feudalism.

The defence of this thesis relies on two characteristics of feudalism:³²

- (i) European feudalism was politically decentralized
- (ii) there was a feudal demographic cycle of population boom and slump.

The significance of the first characteristic is that European feudalism offered a kind of social laboratory in which an unusual variety of systems of production relations could exist in one geographical region. Although there were state-like superstructures in local areas (where a 'local area' is something like 'England', 'France', 'Poland' and so on), there was no state in a position to impose uniform production systems throughout the continent – there was no Castile for Europe as a whole. This meant that a relatively large number of potentially different production systems were guaranteed the conditions of potentially independent growth in a relatively small geographical area.

The significance of the second characteristic of European Feudalism is that the slump phase of the demographic cycle was typically so severe that it led to a recurrent collapse of feudal ownership structures over significant portions of territory.³³ The slump created internal frontiers beyond which lay vacant means of production – especially land. As time went on and population began to revive, the character of the subsequent production relations would depend on the identity of the groups who were able to assert effective control of the previously-devastated forces of production – especially land and labour-power – and the conditions under which these assets were held.

The possible configurations of control – which are also the possible outcomes of class struggle in the wake of the demographic collapse – range from those most favourable to the direct producers to those least favourable. The most favourable outcome is for the peasant household to obtain the virtual right of private property in the land (or for the peasant community to attain virtual collective autonomy). This is schematically the *French* outcome. At the other end of the spectrum is what we may call the *Polish* outcome in which the landlords are sufficiently powerful both to control the land and to reduce the direct

producers to servile status – that is, to reintroduce feudal relations.³⁴ In between these extremes is the *English* outcome, wherein the lords prove strong enough to control the land but insufficiently strong to cow the peasantry. The English outcome establishes the class structure of agricultural capitalism, and such a structure leaves its two sides no choice but to negotiate the labour market relations which ‘comprise a world’s history’.³⁵

The previous paragraph describes the fission process of a feudal economy subject to the demographic cycle. The Feudal Fission *Thesis* claims in addition that something like English agricultural capitalism is an *almost inevitable* (or very likely, normal) outcome of such a fission process. This conviction relies on the decentralised character of European feudalism: if there are ten or 20 independent fission experiments in each demographic cycle, the probability of at least one ‘English’ outcome is very high, even if the probability is very low of an English outcome in any single experiment. If the chance of England on any single throw of the feudal die is as low as 10 per cent, for example, the chance is almost 90 per cent of at least one England occurring in 20 throws (corresponding perhaps to the feudal logic working itself out independently in 20 different regions of Europe during a single demographic cycle). And England only has to happen once for capitalism to become established. This is why it is not as fanciful as one might suppose to suggest that the transition from feudalism to capitalism was almost inevitable, almost indeed a natural necessity of history.³⁶

A composite theory of history?

If the Feudal Fission Thesis is true, then we have an explanation of the quasi-necessary *origins* of capitalism from feudalism which adds direction to the existing (competitive) explanation of the subsequent triumph of capitalism *over* feudalism. This is closely analogous to the way in which the general Darwinian model is fleshed out in relation to cases such as the neck of the giraffe. It turns out then that the overall structure of Marxian and Darwinian theories is remarkably similar. The theory of outcomes of class struggle takes the place of the theory of variation in Darwinian evolution, and Competitive Primacy offers a general model of social selection (though it remains less general than its Darwinian counterpart of natural selection).

The composite Marxian explanation claims (i) that it was almost inevitable that an economic regime would emerge from feudalism

which as a matter of fact had a higher propensity than feudalism to develop the forces of production (Feudal Fission Thesis) and (ii) that it was very likely that this propensity would lead to a differential development of the forces which would in turn prove decisive in the competition between the two regimes (Competitive Primacy). Notice that while the thing that is historically significant about the emergence of capitalism is its propensity to develop the forces, it is not necessarily the propensity that explains the emergence. The relationship between the Feudal Fission Thesis and technological determinism in fact depends on the weight accorded to technological factors in the explanation of the feudal demographic cycle. If it is the case that feudal productivity by itself mandates sufficiently violent demographic trends to ensure feudal fission (given feudal relations of production), then the Feudal Fission Thesis is a (fourth) version of the Primacy Thesis and the whole explanation of the transition from feudalism to capitalism would exemplify technological determinism.

One might doubt however that the demographic explanation could succeed without reference to untechnological factors – such as family structures and gender relations in early medieval Europe; the incidence of disease and states of medical knowledge unrelated to the level of the forces of production and so on.³⁷ In this case, the Feudal Fission Thesis offers a directed explanation of what conduces to technological development, but the explanation is not a technological one. It is in any event a special explanation in depending on specific features of feudalism: its political decentralisation, and an organisation of its production (and perhaps) family relations which perhaps lent its demographic fluctuations a characteristically fissionable tendency.

To sum up: the demise of Cohen's over ambitious historical materialism, centred on his Full Development Thesis, does not leave historical materialism bereft of distinctive historical Theses. Natural Primacy of the forces of production has wide diachronic relevance (though the extent of its synchronic application to post prehistoric societies is difficult to assess). The characteristic Marxian concern with economic and political conflict as constitutive of historical change in historic class societies can however be reconciled with technological determinism via a concept of Competitive Primacy; this forms the central doctrine of an undirected historical materialism. Feudal Fission finally restores something of the sense of direction lost by Competitive Primacy in the important case of the transition from feudalism to capitalism, even though the technological credentials of the Feudal Fission Thesis itself are difficult to establish.

Modes of production and theories of transition

This conclusion on the state of play among analytical Marxists on the theory of history may be compared with the exchanges on the same issue in the pages of *Science and Society* sparked off by Gottlieb (1984) and Laibman (1984), joined subsequently by Amin (1985), Heller (1985), Hoffman (1985–86), Sweezy (1986), McLellan (1986) and Rudra (1987), and provisionally concluded with replies by Laibman (1987) and Gottlieb (1987).

Gottlieb wished to synthesize the ‘class struggle’ views of Robert Brenner (which tend towards Dobb’s side in Dobb’s original controversy with Sweezy in the 1950s) with those of Perry Anderson, who emphasized the imbrocation of the political with the economic in the special conditions of European feudalism, and of Immanuel Wallerstein, who insisted on the strategic importance of each region’s relationship to a developing ‘world-system’ of long-distance trade and great power politics. The novelty of Gottlieb’s contribution lies in his repudiation of the idea that there is a dynamic of feudalism comparable to the supposed dynamic of capitalism and his associated retreat from a deterministic (‘hard’) theory of the transition to capitalism towards something more spongy. ‘Soft’ theory attends to the traditional Marxian factors in the analysis of feudal society – class struggle, the rise of trade, the tension between town and countryside – without assuming thereby that the transition to capitalism was an inevitable, or even a very likely, outcome.

This agnostic stance shares something in common with Wright and Levine (1989[1980]), and indeed with Brenner’s conclusion on the unlikelihood of the transition to capitalism. The interesting theoretical point made by Gottlieb, which relies on Anderson’s views of the combined politico-economic character of feudalism, is that one can only expect ‘laws of development’, and hence hard theory, from regimes of production in which the political and economic levels are sufficiently distinct to allow the economy to follow its own autonomous logic. This is why capitalism is the only mode of production that exhibits law-like behaviour, and why a theory of history is in the strict sense impossible. This position received a warm, and perhaps surprising, endorsement in the review of the debate by Sweezy (1986, 82). In our terms, Gottlieb denies that there can be a directed, general theory of history, and allows for a directed, special theory only in the case of capitalism.³⁸

A number of points seem to be in order. First, it is unclear why a law of motion of a mode of production has to be a law of autonomous economic development in order to play a crucial role in the theory of

history – even a directed theory of history. In the case of feudalism, as I have argued, the ‘law of motion’ is a law of non-development, whose demographic consequences (long-term fluctuation of population density) are exacerbated by the lack of autonomy of the economic from the political levels under feudal relations of production. For it is the direct, coercive relationship of the lords to the peasants which enables the former to react to a crisis of revenue by increasing their exactions from the latter to the point where the long-term revival of the economy, and even the survival of the peasantry, is threatened (cf Gottlieb (1984, 8) citing Brenner).

Now it is certainly a beguiling inference that a law of non-development cannot form part of any explanation for development, and hence that the law of (non)motion of feudalism cannot form part of a ‘hard’ theory of historical movement. In Gottlieb’s words (1984, 11):

The class struggle theorists, as well as Anderson and Wallerstein, all explain historical change by reference to the outcome of struggles between different classes. But a generalized attention to class struggle as the determinant of history is quite different (much ‘softer’) than the identification and description of one determinate relation of production-appropriation, the imperatives of which lead to determinate historical change.... An analysis of the extra-economic coercion – the relation seen as ‘constitutive’ of feudalism by the class struggle theorists – cannot, in fact, provide the theoretical connection between the crisis of seigneurial revenues and the development of capitalism. In different places, the response to this crisis took very different forms; some of those responses led towards capitalism and some did not.

What Gottlieb evidently has in mind is a requirement that a single prime mover be found in feudal society which drives that society deterministically through an inevitable transition from which it emerges rearing to go as a capitalist market economy. But that is to mistake an explanation of the origins of capitalism for an explanation of its subsequent success. In terms of evolutionary ideas, it is to confuse a theory of variation with a theory of natural selection. This makes Gottlieb misinterpret the evidence he introduces in the last sentence quoted above. Far from contradicting the possibility of a theory of history, as he claims, the fact that ‘the response to this crisis took very different forms’ is a statement of one requirement for such a theory to be true, namely, that there is a variation of social form on which social selection pressures can

begin to work. Indeed, it is part of the argument why capitalism arose in Europe rather than Asia that conditions in Europe – especially those of the kind emphasized by Anderson – were especially conducive to variations in social form.

It is of course true that there is no hard determinism about precisely when and where the origin of capitalism is going to occur, but the theory of history can happily do without that level of determinism. As long as the feudal demographic cycle is repeated often enough, the chances of capitalism coming into being can be very high, even if the likelihood of its occurrence at any one place in any one cycle is very low. Contrary to Bois (whom Gottlieb (1984, 10) rightly criticizes in this connection), it is not necessary to this conclusion that every repetition of the feudal cycle in a given country brings that country progressively closer to capitalism (this would be the case if there were a feudal prime mover pushing feudalism always in the direction of capitalism). It is sufficient that the probability of the transition occurring in a given cycle is independent of the probability of it occurring in any other cycle, such that the intensification of serfdom, say, in a prior cycle does not make a country more or less prone to capitalism the next time around.

The (high) probability of capitalism coming into existence *in some cycle and at some place* is under this assumption an elementary consequence of probability theory. Contrary to Gottlieb (1984, 36), we *can* therefore ‘describe a structure of class relations the tensions within which guarantee, or (at least) define as highly likely, the crucial historical development which culminated in the triumph of capitalism’. And, contrary to Laibman (1987, 181), we can have an explanation from random process that nevertheless ascribes to an event a probability approaching one, which is about as non-random a conclusion as anyone could hope to get.

It is true, indeed it is a consequence of the distinction between theories of variation and theories of selection, that an argument why capitalism is likely to arise is unlikely to appeal to the same facts as the argument why it is likely to succeed, given that it has arisen. It is here, in explaining the triumph rather than the origin of capitalism, that the historiography of Sweezy and Wallerstein comes into its own. For it is surely in the competitive arenas supplied by the development of long-distance trade, and the world-system of emergent nation-states, that the technological edge enjoyed by capitalism begins to make itself felt. It pulls ahead of its rivals, eventually undermining their conditions of reproduction.

We should not be surprised if this process takes centuries, since the advantage capitalism enjoys is tendential and cumulative, not a matter

of overnight success. Indeed, since capitalism originated in one of the more backward regions of the world economy (it may even have originated there for the same reason the region was backward),³⁹ there may have been an inevitable lag before Europe was able to catch up with the technical level of, say, China, before it was in a position to challenge and then surpass it. The lag which proves embarrassing to the prime mover conception of historical change is easy to accommodate within a genuinely evolutionary model.

Gottlieb, to conclude, is absolutely right to look for a synthesis of the various contributions to the debate, but he misses the extent to which the contributors are contributing to distinct, though complementary, branches of transition theory. Dobb, Brenner and, in a different way, Anderson, contribute to a theory of variation, centred on political organisation and class struggle. This accounts for the origin of capitalism. Sweezy and Wallerstein have more to say about the reasons for capitalism's subsequent success in the struggle for survival with other regimes of production. None of these contributions is as hard as Gottlieb might ideally like, but they are not so squidgy that they cannot support a respectable theory of history.

Laibman: between the sundered concept and the floating fact

The interest in David Laibman's intervention lies in the way that he links Gerry Cohen's work (about which Gottlieb says very little) to methodological concerns which are more usually associated with the Hegelian rather than the analytical side of contemporary Marxian thought.

For Laibman, Cohen's model of forces and relations of production describes the process by which an 'abstract social totality' unfolds in history. Gottlieb's hard determinism belongs to this level of theoretical analysis, whereas much softer explanations are applicable at the conjunctural level of actual historical events. Laibman's approach is unusual because the logic of unfolding forms is usually applied, as it was in *Capital I*, chapter 1, to the unfolding logic of the commodity form rather than the unfolding logic of technology.⁴⁰

It is easy to see how, in speaking of unfolding logics, Laibman laid himself open to the charge of philosophical rationalism duly made by McLennan (1986). Laibman (1987, 184) has however denied the charge in the pleasingly-phrased contrast borrowed as the title of this section. Marxist methodology should avoid both rationalism (the sundered

concept) and empiricism (the floating fact). This implies that the model of forces and relations of production is falsifiable as a whole, and yet it leaves rather unclear what its relationship is to the empirical material of history. It is difficult to see, in particular, how the theory could be hard at the level of the totality while remaining soft at the level of all, or some or most of the historical events to which the theory applies: at what point in the ascent of the hierarchy of abstraction does the indeterminate turn into the determinate?

One answer which might allow Laibman to square the methodological circle is given by the Feudal Fission Thesis. If one identified the abstract totality with European feudalism and the conjunctures with its emergent national components, then I have argued that there is a determinism about the fate of the whole – a directed transition to capitalism – which does not inhere in any of the components taken in themselves.

But this is not the way in which Laibman develops his argument about the relation of the general to the particular. He prefers instead to display the sequence of modes of production – slavery, feudalism, capitalism – according to the type of development they confer on the forces of production. There is nothing wrong with this procedure in principle, but Laibman introduces a characterisation of feudalism's effect on the forces of production which is at variance with the understanding of every other contributor to the debate. He regards feudalism as leading to an *intensive* development of the forces of production, compared to slavery (which develops them *extensively*) and to capitalism, which develops them *intensively and extensively*. Now it may be true that feudalism is technologically dynamic compared to slave systems (because, as Laibman says, peasants have greater incentives to innovate than slaves), but it is common ground among all other commentators that the key fact is the technological sluggishness of feudalism compared with capitalism, however well it stands up in comparison to slavery.

Laibman's apparent lack of appreciation of the significance of this fact leads him to give the impression that most of the technological progress has been achieved by feudal lords, either before capitalism is properly off the ground, or in the process by which feudal lords transform themselves into agricultural capitalists:

As the scale of the feudal economy declines, its internal relations are likely to be strengthened – it casts off its weakest links – until a rough equilibrium arises between a fortified feudal sector and a stagnant urban economy of simple commodity production Given the magnitude of the struggles over primitive accumulation, however, it is

hard to see how that movement could be carried through without relying on pre-existing surpluses with their own generating mechanism: this is precisely the role of the *feudal* PRs in the origin of capitalism ... The feudal lords therefore not only can, but must, turn feudal surpluses to the task of primitive accumulation, if the logic of commodity production is to unfold. (Laibman 1984, 278–9)

This offers an original, indeed slightly bizarre, picture in which dynamic feudal lords are bursting through the fetters imposed by a stagnant merchant class – a kind of Sweezy-in-reverse. What is especially unclear is the mechanism by which this social change is supposed to have occurred. There is more than a dash of teleology in the formulation above. Indeed, the closing phrase echoes *Capital I*, chapter 1 more than it recalls Cohen's *KMTH*. But it also appears that the feudal lords are, for undisclosed reasons, the agents of a conscious transition to capitalism – an interpretation reinforced by Laibman's acknowledgement (1984, 291) that his 'productive force determinism' 'identifies the steady (and inexorable) increase in the power of human will to transform its external conditions as the material root of social change'.

It seems then that Laibman is advocating a version of what I called above Intentional Primacy of the productive forces. What distinguishes Laibman's from Cohen's application of the concept is that for Laibman development of the forces appears to be a characteristic of feudalism brought about by feudal lords for the sake of the transition to capitalism. This seems untenable on factual grounds (feudal lords did not by and large develop the forces) and on motivational grounds (why should surplus-seeking lords seek surplus by developing forces of production when this goes completely against the grain of their social-structural location within feudalism?). Even apart from the general argument given above that no class actor is ever in a position to act in the manner required for the doctrine of Intentional Primacy to be true.

Laibman gives us an intriguing recapitulation of the debate in terms of Marxian methodology, but does not advance our understanding of the historical processes which the debate is intended to address.

A case in conclusion

Throughout this chapter I have contrasted Intentional Primacy with Competitive Primacy, insisting on the need to distinguish them as alternative readings of Cohen's theory and advocating the superiority of the latter conception over the former. I commented that the collapse of

the Soviet Union powerfully reinforces an initial scepticism regarding Intentional Primacy. It seems on the other hand to offer a new, if unfortunate, endorsement to the doctrine of Competitive Primacy – for why has the Soviet experiment failed, if not from its failure to compete economically and militarily with a system of production relations that has proved itself technically superior?⁴¹ The collapse of Soviet Marxist regimes thus acts as a critical test between two versions of Marxist Theory. It shows that in the clash of rival viewpoints, it is Competitive Primacy that is fittest to survive.

Notes

1. Thus, it is presumably true that the evolution of the human species from the higher primates is an evolution in the direction of superior intelligence. There can nevertheless be an undirected explanation of the prevalence of the human species – and even one that appeals to superior intelligence as part of the explanation – so long as the supposed explanation does not claim to explain why it was necessary (or likely, or normal) that a species of superior intelligence would eventually supplant the higher primates.
2. Carling (1986a, 31) introduced the distinction between general theories of transition between modes of production and special theories of each mode of production, where the latter presupposed the existence of the given mode of production. Here I am extending the usage to distinguish among theories of transition, between those that take for granted the existence of the historically-previous mode of production (special theories of transition) and those that apply across all or many transitions (general theories of transition).
3. Derek Sayer (1987, 117–20) takes a similar line against Cohen's reading of Darwinism. The later chapters of Wright, Levine and Sober (1992) are clearer on this point than their discussion cited above. See especially pp. 78, 119.
4. Wright, Levine and Sober (1992, chapter 8) discuss this linkage between the theory of history and 'scientific socialism'.
5. My comprehension of the logic of Cohen's explanatory strategy owes a great deal to joint work with Paul Wetherly (1992).
6. In common with Elster (1985, 274, no. 2), I did not understand that this was Cohen's position. The misunderstanding led me in Carling (1991a, chapter 3.1) to defend Cohen against a criticism made by Robert Brenner (1986, 46–8, no. 13) that I now think is cogent.
7. Cf. Sayer (1987, 122–3), Wright, Levine and Sober (1992, 157–60).
8. Cf. Cohen and Kymlicka's remarks on the solubility of the Prisoners' Dilemma (187) and 'the material constraints under which historical structures arise might regularly open ways for individuals to ensure that productive progress occurs' (188).
9. This is the gist of the objection put forward by Brenner (1986, 46–8, no. 13) which I now accept is conclusive. I note however that the objection is conclusive only against the Intentional version of the Primacy Thesis. It does not touch the other versions shortly to be discussed, which retain a genuine

- functional character. I note also that the objection that historical actors would never be in a position to choose what Gerry Cohen says they choose is distinct from one of Joshua Cohen's objections, that historical actors do not have a sufficient interest in choosing what Gerry Cohen says they choose.
10. This verdict depends on the judgement that, however impressive are the Soviet achievements in some forms of extensive (civilian) economic growth, the Soviet economies have failed lamentably to match the intensive economic growth of representative capitalist countries. On this, and the unfavourable comparison of the Soviet economy with the most recent experience of South China, see especially Paul Bowles and Tony Stone (1991, 266–8) and Robin Blackburn (1991).
 11. For an assessment of this debate, see Carling (1991a, chapter 1)
 12. The tendency to react to the loss of a Primacy Thesis by invoking the pre-eminence of empirical historiography to the Marxian project is evidenced in Wood (1989, 72) and properly resisted in Laibman (1984, 259).
 13. I hope therefore to show that Buchanan (1987, 110) is misled in thinking that 'To abandon the Development Thesis is to jettison the Marxist philosophy of history – the grand view that history is *progress*'.
 14. In the methodological aspects of what follows, I am especially indebted to Graham Macdonald (1992).
 15. Strictly speaking, what explains the institution is its past functionality and the current institution arises from the past institution by some process of direct social reproduction rather than a process of selection. But if the institution's environment is unchanged, then the current specimen remains functional, even if its current existence is not explained by its current function. See Cohen (1982, 38–42).
 16. For reasons that are obscure to me, Elster (1985, 282) denies that the exploitation of economies of scale represents a development of productive forces.
 17. '[A]s Marx was so aware, human beings are self-justifying animals: few of them are comfortable as self-conscious pursuers of naked self-interest' (Cohen 1986, 319). Taylor's historical evidence goes against his theoretical position that co-operation is secured purely through rational choice in an iterated game.
 18. See Cohen (1978, 212) for Marx's argument that primitive communists differentiated themselves insufficiently from primitive communities to experience the problems caused by rational individualism. I rather doubt it myself.
 19. This goes beyond the agnostic position on the contents of the superstructure advanced by Wetherly and Carling (1992).
 20. Given the time scales likely to be involved, there will also be obvious problems in determining when a stalemate between two competing systems has been reached.
 21. I should emphasize that I am not necessarily endorsing the validity of Luxemburg's theory by this illustrative use of it.
 22. See Christopher Bertram (1990) for an excellent discussion of this theme.
 23. This suggests that the Dobb/Sweezy polarisation is a false one: Marxism does not have to choose either political muscle or market power as the predominant general agent of historical change.
 24. See Macdonald (1992).

25. The ambiguity is apparent in the different formulations on successive pages of Cohen (1978, 160–1). For a full discussion, see van Parijs (1986).
26. This point is made strongly by Elster (1985, 286).
27. This conforms with Brenner's (1986) characterisation of historical agency.
28. This idea exists in a minor key within Cohen's *KMTH* discussion of The Primacy Thesis. See especially Cohen (1978, 148–9).
29. Levine and Wright (1989 [1980]) emphasize that class capacities are not determined by forces of production. Perhaps so, but Competitive Primacy holds that class capacity is strongly conditioned by forces of production.
30. Carling (1991a, chapter 14.4) discusses this phenomenon under the heading of 'historisis'. And I cannot resist the following formulation '... not everything is possible at every juncture, and throughout most stretches of history societies are not at junctures at all' Wright, Levine and Sober (1992, 90).
31. Cohen relies heavily on the progressive overall pattern of technical development in history to support the plausibility of his asocial argument for Intentional Primacy. He then throws down the following challenge: 'either accept that the asocial premisses have great explanatory power, or offer an alternative explanation of the contrast between frequency of progress and infrequency of regress'. (Cohen and Kymlicka 1988, 188). Competitive Primacy takes up the challenge.
32. Less brief defences are available in Carling (1991b) and Carling (1992). The least brief defence is in Carling (1991a, chapters 1–3).
33. It is an interesting question whether European Feudalism, therefore, violated Natural Primacy – I guess not, so long as feudal relations were always capable of revival, however terrible the slump.
34. Only chattel slavery would be a worse outcome for the direct producers.
35. Elster (1985, 278–86) discusses the variety of views to be found in Marx on the origins of English capitalism. The effect of Brenner's historiography is to push the key moment of transition back to as early as the fourteenth-century.
36. Carling (1991a, chapter 3.2) enters some important caveats to this basic claim.
37. I owe this point to Graham Macdonald (1992).
38. In his final contribution to the debate Gottlieb (1987, 193–5) narrowed the scope of the directed theory even further, to apply only within competitive capitalism, as opposed to its contemporary state-managed variant. The effect is to deny that socialism is a likely outcome of the laws of motion.
39. The common factor is the fragmentation which accompanied the demise of the Roman and then the Holy Roman empires. On this, see Amin (1985) and Laibman (1987, 182).
40. Direct extrapolation from the first chapter of *Capital I* would tend to favour the Sweezy and Wallerstein side of the debate because of its emphasis on the feudally-corrosive impact of trade. Carling (1986b) discusses the tension between the forms of value and the historical process, and see now Smith (1992) for an interesting development of the argument.
41. McCarney (1991, 24–6) and Wright, Levine and Sober (1992, 190, no. 6) share the opinion that the collapse is readily comprehensible on historical materialist grounds, though their reasons adopting for this stance differ with their differing comprehensions of historical materialism.

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6

History, Exploitation and Oppression¹

Alex Callinicos

History is 'little more than the register of the crimes, follies, and misfortunes of mankind', Edward Gibbon famously wrote – and then proceeded with relish to recount a tale replete with such evils (Gibbon 1995, 102). One major reason why the historical record makes such grim reading is, of course, the pervasive presence of various kinds of social inequality which have – for the past few millennia anyway – locked the majority of humankind into structures of domination and subordination.

Since this chapter involves a critical consideration of a theoretical treatment of these inequalities by Alan Carling, it may be helpful at this stage to introduce the general definition he offers of them. 'Social divisions', as he calls them, have the following characteristics:

- (i) They occur in some form or other in many different historical and cultural settings;
- (ii) they are fateful for the lives of individuals;
- (iii) they are institutionalized in formidable ways (often although not always entrenched in legal codes);
- (iv) they are associated with large and/or pervasive inequalities of condition;
- (v) they are linked in various ways with major processes of social change;
- (vi) they are at once material and social ...;
- (vii) they are widely, but not universally, thought to give rise to injustices which ought to be rectified. (Carling 1991, 1)

Carling concentrates on three main instances of social division – social class, gender and ethnicity – but there are, of course, others. Now the Marxist theory of history, the development of which Carling and I are both committed to has traditionally made the strong and counter-intuitive claim that one form of social division, namely class, explains the others. This is, in fact, a specification of the most general proposition

of historical materialism which identifies two main mechanisms of social change – the development of the forces of production and the contradictions with the social relations of production to which this gives rise, and the class struggle between exploiter and exploited which develops within the framework of these structural contradictions.²

The explanatory primacy that this implies for class antagonism over other forms of social division is, of course, very unfashionable. This is not simply because Marxism itself has become very unfashionable. Or rather, one reason why Marxism is now definitely *démodé* is the general acceptance of the idea that societies consist of clusters of different forms of domination and subordination, none of which can be treated as in principle more important than any other.³

Well, I think there are worse things in life than being out of fashion. I wish to defend the traditional Marxist claim about the primacy of class. In doing so, I attempt to clarify what the claim can be taken to imply. But I shall proceed in a rather indirect way, by discussing Carling's book *Social Division* (1991). I first consider the light it throws on debates about the kind of theory historical materialism is and then examine Carling's analysis of social division. My charge here is that he undercuts the claims he makes for historical materialism as an explanatory theory by, in effect, adopting the pluralist conception of society, that is, the prevailing orthodoxy which treats the various forms of social division as, at least for analytical purposes, of equal importance.

Social evolution and rational choice

A way into the issues I wish to consider is provided by the controversy that Carling, in a slightly earlier phase in his intellectual development, provoked by his enthusiasm for Rational Choice Marxism. This variant of Marxism – RCM, as I shall call it – proved to be the most influential product of the somewhat broader theoretical current which emerged at the end of the 1970s and came to be known as Analytical Marxism.⁴

Negatively, Analytical Marxism involved a rejection of more traditional forms of Marxist philosophy and especially of any appeal to dialectical modes of reasoning. More positively, according to one of its chief exponents, Erik Olin Wright, it was characterised by a 'commitment to *conventional scientific norms* in the elaboration of theory and the conduct of research', an 'emphasis on the importance of *systematic conceptualization*', a 'concern with a relatively *fine-grained specification of the steps in the theoretical arguments linking concepts*', and the 'importance

accorded to the *intentional action of individuals*, within both explanatory and normative theories' (Wright 1994, 181–2).⁵

RCM highlighted this last feature. If there was any distinctive Marxist method it consisted, rather surprisingly, in an extreme version of methodological individualism, according to which, in Jon Elster's words, 'all social phenomena – their structure and change – are in principle explicable in ways that only involve individuals – their properties, their goals, their beliefs and their actions' (Elster 1985, 5). Social explanations must take the form of micro-explanations whose premisses refer only to individuals and their attributes. The possibility of making generalisations depended on a resort to rational-choice theory which, in the style of neo-classical economics and game theory, relies on the assumption that individuals will act rationally in the rather restricted sense of optimizing, that is, adopting whatever means best realizes their preferences.

Carling's enthusiastic presentation of RCM in an article published in *New Left Review* in 1986 provoked a counter-blast from Ellen Meiksins Wood, followed by a further exchange between Carling and Wood accompanied by a rather fence-sitting piece of mine.⁶ The form my fence-sitting took was basically in sympathy with Wood's critique of RCM, the burden of which was to deny that the substance of Marxism – above all, its account of the dynamics of historical change, of the laws of motion of capitalism and of the processes of exploitation and class struggle – could be formulated in methodological individualist terms. Modes of production, structures of exploitation, classes and the like cannot be reduced to the effects of the interactions of instrumentally rational individuals.⁷

I was, however, much less happy with the interpretation of historical materialism either stated or implied by Wood's argument. As in other writings, she rejected in principle any appeal to the claim – central, of course, to Cohen's elucidation of historical materialism – that societies change as a consequence of the long-term tendency for the forces and relations of production to come into conflict with one another. To defend any version of this claim was, to quote Wood's response to my criticism, to adopt 'historical unilinearism, according to which all history, sooner or later, must follow a single inexorable logic leading to capitalism – the ultimate outcome of which will be socialism' (Wood 1990, 127).

To such naïve faith in historical progress she counterposed a version of Marx's theory of history heavily indebted to Robert Brenner's widely discussed account of the origins of European capitalism (Aston and Philpin 1985). Brenner locates the decisive breakthrough in the emergence during the early modern period of the paradigmatic capitalist

trinity of landlord, tenant farmer and wage-labourer in the English countryside. That this development occurred in England rather than in, say, France or Germany, was the contingent outcome of the social conflicts between lord and peasant that raged throughout Europe in the late mediaeval era and which on the continent gave rise to absolute monarchies and, even, in the east, to the second serfdom. Generalising from Brenner's argument, Wood asserts that 'class struggle generates historical movement', indeed that class struggle is 'the operative principle of historical movement' (Wood 1985, 105).

Now my worry about this account of social change had to do partly with reservations about Brenner's historiography and the conception of capitalism it implies.⁸ More fundamentally, however, I argued that in reducing the Marxist theory of history to one of class struggle Wood ran the risk of collapsing it into a form of voluntarism:

once structural contradictions have been excised from historical materialism, it is not clear that what is left amounts to a theory of social transformation in any real sense. Class struggle alone cannot account for the transition from one mode of production to another. Open or concealed conflict between exploiter and exploited is an endemic feature of class societies. But it assumes a greater intensity in periods of what Gramsci called 'organic crisis', where the very viability of the prevailing social system is placed in question. Marxism can only provide the theory of history it purports to offer if it can explain the emergence of such crises. To do so in terms of the class struggle itself, as some contemporary versions of Marxist economic theory (for example, the 'capital-logic' school and regulation theory) tend, is not merely to commit a vicious circularity, in which intensifying class struggle explains intensifying class struggle; it is also to reduce historical materialism to a voluntarist social theory, where the motor of change is the clash of hostile class wills. Andrew Levine argues that versions of Marxism 'that do not theorize transitions, that fail to postulate a direction of change between epochal structures', represent 'not a materialist theory of history' but a 'materialist sociology'. Wood's 'political Marxism' is little more than a sociology of domination.⁹

Levine in the passage cited in the preceding extract characterises a 'materialist sociology' as 'a theory of social forms, but not of the transitions between these forms', which relies on 'material categories', that is, those referring to technological and economic causes, in its explanations (Levine 1987, 104; cf. also 190, no. 15). A more recent discussion of mine

of what it is to be a theory of history may help to bring out the point here. A theory of history, I argue, comprises three distinct theories:

- (1) a theory of structure, that is, of the nature of and the differences between social formations;
- (2) a theory of transformation, that is, of the mechanisms which bring about the movement from one kind of social system to another; and
- (3) a theory of directionality, that is, of the overall pattern – typically, progressive, regressive or cyclical – described by the sum of these movements. (Callinicos 1995, 95–109)

Now Wood has a theory of structure, of a conventional Marxist sort based on the concept of mode of production. But she has, at best, a weak theory of transformation, which makes the transition from one mode of production to another hang entirely on the contingencies of the class struggle. And the very idea of a theory of directionality would sit odd with her hostility to any association between historical materialism and the concept of progress. The crucial issue here is the weakness of Wood's theory of transformation. It means that, while undoubtedly her version of historical materialism is clearly in some sense *about* history – in the sense of the dispersion of human societies in time and space that is the basis of the historical record – it is not really a theory of history in sense of offering an *explanation* of social change.

Since the concept of explanation figures much in the subsequent discussion, it may be worth here offering a definition. An explanatory theory posits some mechanism(s), which may not be observable, to account for a specified range of phenomena (Baskhar 1978). In this case the *explanandum* is historical change. It is not that Wood does not point to any mechanism to account for this phenomenon – the class struggle is intended to play this role in her version of historical materialism. But, for the reasons given in the passage from my earlier piece cited above, this mechanism cannot on its own account for the phenomenon in question. So what purports to be a theory of history turns out to be merely what Levine calls 'a theory of social forms'.

In as much as Wood offered a general theoretical response to my criticism it consisted, in the first place, in the assertion that 'the cumulative continuities of history do not alter the fact that each distinct mode of production has its own specific connections between forces and relations of production, its own specific contradictions'. True enough, I believe, but hardly relevant to the question of whether the tendency for these

connections to become conflictual is a necessary condition of systemic transformations and the accusation, already encountered, that those who answer this question in the affirmative are committed to the belief that 'socialism has been inscribed in the inexorable laws of progress since the dawn of history' (Wood 1990, 125, 128).¹⁰

This latter charge just happens to be false. One of my chief objections to Cohen's attempt to restate orthodox historical materialism has always been that it seemed to imply that social revolution – that is, the movement from one mode of production to another – and therefore, as one instance of this kind of movement, socialist revolution, was inevitable (Callinicos 1989, 52–64). There is no ineluctable necessity leading from one mode of production to another precisely because, if Marx is right, there are two mechanisms of historical change – systemic contradictions and class struggle; in principle, there is no reason why these two mechanisms should coincide in the way required to bring about the transition from one mode to another. The development of a Gramscian 'organic crisis' may be a sign that historical progress, in the sense of the further development of the productive forces, requires a social revolution, but it does not follow that such a crisis will bring into being the agencies – social movements, political organisations, and the like – on which the possibility and indeed the success of a revolution would depend. A theory of history in the sense outlined above does not have to be an historical teleology.¹¹

Transitions to capitalism

This then brings us back to Carling. For his more recent work has been marked by a certain retreat from the unqualified enthusiasm for RCM shown in his original 1986 article. In his own words,

I became more aware of the limitations of rational-choice theory, and, simultaneously (not a logical consequence of the first awareness), I became more aware of the strengths of competing types of explanation – especially functional explanation – and of the theoretical claims both of collective action and of supra-individual systems of perception and belief transmitted directly in a process of socialization rather than attained through lengthy processes of ratiocination. (Carling 1991, 6)¹²

This theoretical shift is reflected in the first part of *Social Division*, where Carling seeks to reconcile Cohen's and Brenner's versions of historical

materialism. Cohen's attempt theoretically to refine the orthodox Marxism of the Second International, notably by arguing that the relationships between the forces and relations of production and the economic base and politico-legal superstructure are functional ones (in which the relations exist because they tend to develop the forces and the superstructure because it tends to reproduce the relations), is only very implausibly reducible to rational-choice theory.¹³

Brenner, however, is a different case. The form explanations take in his historical materialism is well captured by Carling in a formulation borrowed from Perry Anderson, 'the logic of the class situation':

In Brenner's world view, all actors are thin rational [that is, instrumentally rational], but they do not all do the same thing, because they are in different situations, which open different opportunities and offer different constraints to their actions. In particular, they are in different class situations given by the different relationships they have to forces of production. In each class situation, the rational-choice logic demands a different response, so that one understands the class specificity of action by understanding the character of the class situation in which the action takes place. History is explicable, to the extent it is explicable, only as the outcome – the resultant – of such class-specific actions of all the relevant class-situated actors. (Carling 1991, 30; see also 1990, 44, fn 15)

Brenner himself characterises his method in rather similar terms:

social-property systems, once established, tend to set to strict limits and impose certain overall patterns upon the course of economic evolution. They do so because they tend to restrict the economic actors to limited options, indeed quite specific strategies, in order best to reproduce themselves – that is, to maintain themselves in their established socio-economic positions. (Brenner in Aston and Philpin 1985, 213)

Brenner's way of putting it does, however, highlight the fact that, even if his variant of Marxism allows some scope for rational choice, it cannot be equated with methodological individualism *pur et dur*. Note the stress that he places on the claim that 'social-property systems' (in more conventional Marxist terms, the relations of production) set limits to actors' options. In other words, his explanations do not meet Elster's requirement that they rely only on individuals and their mental states;

they invoke both individuals *and* social structures – that is, the production relations that constitute what Anderson and Carling call the ‘class situation’. To that extent Wood is, I suppose, justified in her bitter denunciations of any association of Brenner with RCM, though in doing so she fails sufficiently to acknowledge the existence among the Analytical Marxists of a spectrum of positions ranging from the out-and-out methodological individualism of Elster to the much more qualified resort to rational-choice explanations made by Brenner and Cohen.¹⁴

How then does Carling seek to reconcile the latter two theorists’ versions of Marxism? His starting point is Brenner’s account of the transition from feudalism to capitalism. Brenner argues that the Malthusian demographic cycle long familiar to economic historians of mediaeval Europe, in which a tendency of population to rise faster than agricultural output gave rise to recurrent crises of subsistence, was a consequence of a structural feature of feudal production relations. Both the two fundamental classes of feudal society, the lords and peasants, had direct access to their means of subsistence and so had no interest in increasing the productivity of labour by applying technological innovations; slow productivity growth then made it likely that any substantial population increase would outstrip the agrarian economy’s productive capacity. The fundamental importance of the development of capitalist agriculture in England was that it put in place a set of class relations where both capitalist farmers and wage-labourers, because of their dependence on the market for economic survival, had an incentive to raise productivity as a means of cutting costs and, therefore, enhancing the price competitiveness of their products. Capitalist ‘rules of reproduction’ make possible an intensive development of the productive forces unattainable in earlier social systems (Brenner in Aston and Philpin 1986; Roemer 1986).¹⁵

Even this brief summary of an elaborate argument should highlight a point of vulnerability, namely its dependence on the apparent accident that in England the lords should, by the end of the Middle Ages, have succeeded in dispossessing large numbers of peasants of their land and, therefore, have created the main precondition for the emergence of a propertyless proletariat. Carling seeks to get round this by dividing mediaeval Europe into a number of independent zones (he posits 11), each dominated by feudal relations of production. This assumption is justified by the historical fact that ‘European feudalism was politically decentralized’, so that ‘there was no state in a position to impose uniform production systems throughout the continent’ and so ‘a relatively

large number of potentially different production systems were guaranteed the conditions of potentially independent growth in a relatively small geographical area' (Carling 1993, 52–3).

Carling then considers the cumulative effect on these zones of successive demographic catastrophes caused by the feudal economy's tendency to stagnation:

The slump creates an internal frontier, in which unused means of production – above all, land – become there for the taking. Who gets the land, under what conditions of labour, is determined by a local balance of class forces, of the type Brenner analyses with such a magnificent comparative sweep, across Europe East and West.

The possible outcomes one can call France, England and Poland. In France the peasants get the land, and have no incentive towards technological development because they remain self-sufficiently aloof from market forces. In Poland the lords get the land and dominate the peasants. They impose a second serfdom, with concomitant feudal stagnation. In England alone, the lords get the land and the peasants get the peasants. This means that in England alone, both the direct producers and the ruling class have no alternative but to become enmeshed in market relations.... Once capitalism is established in the English countryside, England can break out of the feudal demographic cycle, and eventually the comparative advantage it enjoys enables capitalism to spread, overturning feudalism in the process. Moreover, there is bound to be an 'English' outcome sometime, somewhere, to the class struggle in the trough of the demographic cycle, given the decentralized character of feudal Europe. Capitalism is inevitable, in short, because there'll always be an 'England'. (Carling 1990, 56–65)¹⁶

In what sense does this model of the transition from feudalism to capitalism represent, as Carling claims, a synthesis of Cohen's and Brenner's versions of historical materialism ('Brenner plus Cohen', as he likes to put it)? On the one hand, the demographical cycle is explained by Brenner's theory of the feudal tendency towards technological stagnation; equally, which outcome of the crisis-point of the cycle is selected in each region is a consequence of the particular course taken locally by the class struggle between lords and peasants. On the other hand,

In rebuttal of Brenner's scepticism about the theory of history [in the sense of a theory like Cohen's which relies on a long-term tendency

for the forces and relations of production to come into conflict] I think it is sufficient to point out, first, that it is precisely the technological limits imposed by feudalism ... that causes the demographic cycle to occur which gives rise through the mediation of class struggle with reasonably high probability to capitalist social relations. And, second, that once capitalist social relations have appeared, it is the growing technological gap between capitalism and feudalism ... which is responsible for the eventual supremacy of capitalism. And a good way to gloss this argument is to say that capitalist relations obtain because they, rather than feudal relations, are most appropriately adapted to develop the forces of production, given the level of development already reached under feudalism. (Carling 1991, 66)

Wood's response to this argument (or rather to Carling's preview of the full version of it given in *Social Division*), for what he calls the 'Feudal Fission Thesis', is in effect to dismiss it as a teleological form of technological determinism:

It is completely unwarranted to jump from the unexceptionable proposition that capitalism uniquely fosters technological development to the contention that capitalism developed *because* it fosters technological development, or the even stronger claim that capitalism *had* to develop because history somehow requires the development of the productive forces, or because less productive systems are necessarily followed by more productive ones. (Wood 1990, 119)

But this is not Carling's argument at all. It is true that he sometimes muddies the waters by throwing in such formulations as: 'Capitalism is inevitable ... because there'll always be an "England".' This is a case, I think, (and not the only one) of Carling's liking for a joke getting in the way of the argument. What his model implies is not the inevitability, but (as he puts it in the last passage cited from his work above) the 'reasonably high probability' of an 'England' – agrarian capitalism – emerging from the crisis of European feudalism. The mechanism responsible for the actual occurrence of that outcome in a particular region would be the same one relied on by Brenner in his model of the transition and elevated by Wood into the prime cause of historical development, namely the class struggle. The probability of such an outcome occurring over time (which in this case means *la longue durée* three or four centuries) derives from the fact that the conflict between lord and peasant unfolds in 11 different zones and in the context of *repeated*

Malthusian crises. Carling assigns the probability of 'England' in any one zone in a given cycle at ten per cent. Over two cycles, the probability of a capitalist breakthrough *somewhere* rises to something about 90 per cent, 'as close to the statement of the inevitability of capitalism, given feudalism, as it would be reasonable to expect from social theory' (Carling 1991, 64).

According to the 'Feudal Fission Thesis', then, the emergence of capitalism is a consequence of the crisis of feudalism, not of some transhistorical necessity to develop the productive forces. But, once an 'England' does emerge somewhere, the intensive development of the productive forces made possible by capitalist production relations does (to use Darwinian terms) give it a selective advantage over other zones (and the states that dominate them). As in his account of the initial breakthrough, Carling adopts an international perspective. The transition to capitalism occurs within the context of a Europe-wide process of economic and military competition which acts as 'a selection mechanism for capitalist over feudal social relations' (1991, 56 and see generally 55–6).

Like Chris Bertram, Carling thinks of international competition as an equivalent within historical materialism to natural selection in biology, with competitive advantage being conferred by the relative level of development of the productive forces. Carling indeed now argues that the most defensible version of Cohen's Primacy Thesis, which asserts that the nature of a society's production relations is explained by the level of development of the productive forces, consists in what he calls 'Competitive Primacy'. This consists in the claim that

Primacy of the forces of production will certainly obtain when:

- (i) there has been a competition between two different systems of production relations with higher and lower levels of development of the forces of production;
- (ii) the differential in levels has caused the system with the higher level to prevail over the system with the lower level. (Carling 1986, 44)

Daniel Dennett has recently suggested that we think of natural selection as an 'algorithmic process'. An algorithm is 'a certain sort of formal process that can be counted on – logically – to yield a certain sort of result, whenever it is run or instantiated'. Evolution should be understood as 'a cascade of algorithmic processes feeding on chance', in which randomly generated genetic mutations are tested for their impact on organisms' reproductive capacity and those that, in a given environment, enhanced survival prospects will tend to flourish. This outcome

depends on certain conditions postulated by Darwin – the tendency for organisms to produce more offspring than their environment can support; variation among organisms; a ‘strong principle of inheritance’, so that variations are passed on; and the fact that some variations enhance their bearers’ ability to survive and reproduce. Dennett writes:

What Darwin saw was that if one merely supposed these various general conditions to apply at crunch time – conditions for which he could supply ample evidence – the resulting process would *necessarily* lead in the direction of individuals in future generations who tended to be better equipped to deal with the problems of resource limitation that had to be faced by the individuals of their parents’ generation. (Dennett 1995, 50, 59, 44, chapter 2)

Carling’s ‘Feudal Fission Thesis’, with its model of a mediaeval Europe divided into competing zones where the first to break through to capitalism – because of causes that have nothing to do with this transformation’s impact on the productive forces so that its occurrence is in this respect random – will gain a decisive advantage over its rivals, certainly bears a marked resemblance to the kind of process described by Dennett. Here the outcome predicted on the basis of the conditions specified by Carling is the emergence of a capitalist economy that permits, thanks to the development of the productive forces it causes, the state concerned to gain a decisive advantage over its rivals. To the extent that the existence of such mechanisms can be generalised beyond the case of European feudalism – and the purport of the idea of Competitive Primacy is surely that it can – then we are entitled to infer that modes of production will rise and fall by virtue of their tendency to develop the productive forces. Attempts to apply evolutionary theory to the case of social formations has, of course, a rather chequered history and contemporary versions, both Marxist and non-Marxist, require careful scrutiny. But, whatever one may think of them, the kind of response offered by Wood – dismissal on *a priori* grounds as teleological and/or determinist – is not helpful.¹⁷

More generally, Carling’s model seems to me a welcome development, for at least two reasons. First, with respect to the debate about the transition to capitalism (which has been going on among Marxist historians and theorists for nearly 50 years now), it has the great merit of being constructed, as Carling puts it, ‘at a macroscopic level – the level of “zones” within European feudalism’. This has, among other things, the

beneficial effect of emphasizing that

the English historical experience might have had, and indeed would have had, counterparts in other regions of Europe. These are the other causal paths, too numerous to imagine, and too detailed to disinter from history, with slightly different admixtures of land-holding customs, class organizations, evictions, infections, and invasions, which would have hit the 'English' target with a probability I have supposed to be 10 per cent. (Carling 1991, 65)

This is a useful corrective to the tendency both in Brenner's writings and especially in Wood's and others' renderings of and extrapolations from them to portray English socio-economic development as representing a pattern wholly different from that on the European mainland. The birth of modern capitalism thus emerges as a consequence, not of the peculiarities of the English, but rather of long-term processes at work within European feudalism as a whole. Carling's model also has interesting parallels with Guy Bois's claim, based on a study of mediaeval Normandy, that in successive feudal economic cycles waves of capital accumulation can be detected, each stronger than the last. Bois, however, argues that these waves were a feature of periods of economic growth and were disrupted when the feudal system went into crisis, whereas Carling's model implies that the low-point of the feudal cycle was the window of opportunity for capitalist development (Bois 1984, 384–90).¹⁸

Secondly, Carling's synthesis of Brenner and Cohen – his integration into an explanation of the origins of capitalism of both the systemic contradiction caused by the tendency for the forces and relations of production to come into conflict and social conflict between lord and peasant – reinstates historical materialism's claim to be an explanatory theory. I do not say that his model is correct, but something like it (in the sense of invoking both systemic contradiction and class struggle) must be true, not simply of the transition from feudalism to capitalism, but of all transitions from one mode of production to another, if Marxism is to be a distinctive theory of history capable of explaining social transformations.

Generalising or dissolving class theory?

So far so good. Yet what the first part of *Social Division*, devoted to historical materialism, achieves is distinctly qualified, if not actually undermined, by the rest of the book. Here Carling seeks to use a version of the

Marxist theory of exploitation and class in order to provide a general account of social division, based on the cases of gender and ethnicity. I say 'a version' because he does not use the classical Marxist conception of exploitation as the appropriation of surplus-labour, which, in the case of the capitalist mode of production, takes the form of surplus-value.

Instead Carling takes as his starting point one of the mainstays of RCM, John Roemer's attempt radically to rework Marx's original theory of exploitation. Roemer conceives the capitalist economy along strict methodological-individualist lines, and seeks to show how the behaviour of optimizing individuals in a market economy leads to exploitation and (since in the Marxist account class is a consequence of exploitation) class antagonism. He constructs two models. The first is an equal-exchange model, where exploitation occurs if two individuals have to work different amounts of time in order to earn the same bundle of goods. Roemer, however, abandons this model, which is still too close to the labour theory of value, for a second, game-theoretical model. Here different kinds of exploitation are generated by considering the hypothetical consequences of one group of actors withdrawing from an economy and taking with them their share of a specified set of assets. If the withdrawers would be better off and those remaining worse off in these conditions, then exploitation occurs in the economy they currently share. Thus feudal exploitation arises where one group (the peasants) lack control of their labour-power, capitalist exploitation where workers are excluded from their share of the means of production and socialist exploitation where the rewards of skilled labour are not equally distributed. Exploitation turns out to be a consequence of an unjust initial distribution of resources, and the Marxist theory of exploitation thus revised is folded into that favourite topic of Anglophone political philosophers, the theory of justice (Roemer 1982; 1989).

Now Carling is not an uncritical follower of Roemer. He argues that injustice is a matter of transactions as well as initial distributions, and prefers a variant of Roemer's first, unequal-exchange model (though, as we shall see, he gives it a game-theoretical spin). He introduces the concept of labour-balance as a measure of what an agent contributes in labour to receive the bundle of subsistence goods: the net gainers (that is, those who put in less than they get out) are exploiters, the net losers (who receive less than they contribute) are exploited. The point of the idea of 'labour-balance exploitation' is to help articulate the fundamental intuition behind Marx's thoughts on justice, which is that 'each individual has an entitlement to equal welfare'. This implies, *inter alia*, that 'any person who makes a contribution is entitled to compensation for

the effort they have expended, in such a way that their welfare is restored to its pre-contribution level.' Thus, *pace* Roemer, '[l]abour-time retains an indispensable role as an index of welfare'. Marx 'regarded property distributions unjustified when and because they arise from, and thereafter served to perpetuate, unjustified allocations of toil'. (Carling 1991, 143, 146; see generally chapters 5 and 6).¹⁹

The point, nevertheless, of Carling's modified Roemerian conception of exploitation is to allow him to act on the thought (which seems to have been perhaps the main force that drew him towards RCM in the first place) that 'the generalization Roemer had made of the concept of exploitation in connection with the various circumstances of social class, could be generalized yet further to apply to circumstances of gender and ethnic relations' (1991, 6). About half of *Social Division* – nearly two hundred pages of a bulky book is devoted to a detailed attempt to effect this proposed generalisation. I lack the inclination and indeed, when it comes to the *arcana* of rational-choice theory, the competence to examine Carling's pursuit of his project in a manner suitable to the energy and subtlety of the arguments involved, and in any case it would be inappropriate to do so here. One example must do both to give a flavour of the enterprise and to indicate what chiefly concerns me here, namely its theoretical implications.

Let us take the case, then, of 'Gender Division', to which Part V of *Social Division* is devoted. Carling concentrates on the issue of housework, which he analyses in game-theoretical terms as an instance of Chicken. Like the Prisoner's Dilemma, Chicken is a game concerned with the problem of how self-interested individuals can co-operate to produce public goods (from consuming which no-one can be excluded even if they have not contributed to producing them). In the case of Chicken, as Michael Taylor and Hugh Ward put it, '[t]here is a minimum amount of work to be done: *either individual alone can do it all*, but each prefers the other to do all the work. The consequences of *nobody* doing the work are so disastrous that either of them would do the work if the other did not' (1991, 256).

Equilibrium in a two-person game of Chicken consists in one of the players doing all the work. As in the case of the adolescent male contests after which Chicken is named, it is a matter of who cracks first. Thus 'the outcome of Chicken is the provision of the public good, with gross inequality of contribution to its provision.' Applied to the household, Chicken is about whether the man or the woman does the housework. Here, however, it is not a matter of who blinks first in a stand-off, but of a long-term social pattern in which the burden is taken by the woman. Carling argues that '*differential socialization by gender resolves the*

household game of Chicken'. The 'network of differential expectations that we call *socialization into gender difference*' creates a margin sufficient to ensure that it is typically the woman who cracks and does the housework (1991, 257, 266).

A public good is thus created, from which all the members of the household benefit, thanks to highly unequal contributions. Carling argues that 'the distributive outcome at the equilibrium exhibits the full paraphernalia of an exploitative class division' (1991, 273). His attempt to defend this claim focuses on the question of class, which Marxists tend to see as a reflection of exploitation, so that exploiters and exploited belong to different (and opposed) classes. A person's class position is typically conceived as her relationship to the productive forces (labour-power and the means of production). Carling takes as his starting-point a formulation of Elster's but the basic point is (at least for these purposes) the same as in the classical Marxist concept: 'A class is a group of people who by virtue of what they possess are compelled to engage in the same activities if they want to make the best use of their endowments' (Elster in Roemer 1986, 147).

Now the difficulty in this conception of class is that, on the Chicken model, gender-exploitation occurs even if the man and woman have exactly the same degree of access to the productive forces. As Carling puts it, '[w]e can arrange for perfect symmetry between actors in respect of resources, identity, past history... and we still have to face the fact that there is a *difference of behaviour* at equilibrium *without difference of endowments*.' His solution is to preserve the conclusion that housework involves a relationship of class exploitation by making 'difference of behaviour' a criterion of class difference:

Class position is about the range of options a person has as a result of the distribution of social access to forces of production. A class division exists between two agents whose welfare differs systematically at an equilibrium of social interaction, as a result of differential possession of forces of production, differential behaviour with respect to the production process or both. (Carling 1991, 274–5)

The first sentence is reasonably orthodox. The second, by making 'differential behaviour' a sufficient condition of class difference, radically waters down the Marxist conception of class. Carling claims to have shown that 'the mechanisms of operation of some types of gender and ethnic exclusion were isomorphic with (RCM) class exclusion and exploitation.'²⁰ But, since the isomorphism derives, in the case of gender

at least, from Carling's redefinition of class, it seems to exist solely in the eye of the beholder. One is tempted by the unkind thought that this redefinition is a bit like an epicycle tacked onto Ptolemaic astronomy to save the phenomena – or rather in this case to preserve the conclusion that gender inequality is a case of class exploitation. For Carling, however, it seems to be part of his more general loosening of the confining corsets of RCM, for he proceeds to argue that 'gender ideology' plays a 'relatively autonomous' role in creating the preconditions for the household Chicken game – a claim that, for all his protestations to the contrary, does not seem too far removed from functionalist sociological role theory (Carling 1991, 291).

However this may be, Carling's watering down in effect equates exploitation and class with *any* social division. To say that class divisions arise where 'differential behaviour' causes differences in welfare is to say they arise wherever significant inequalities occur. The apparent restriction implied by the requirement that the differences in behaviour must be 'with respect to the production process' is really no sort of restriction, since just about anything social can with some degree of plausibility be related to production (particularly if the latter term is extended, as it is by Carling, beyond the public sphere to the household).

Though Carling sees himself here moving beyond RCM, the conflation he makes of class exploitation with social division *tout court* seems to a potential inherent in Roemer's revision of Marx. This can be seen if we consider the 'Revolution in Class Theory' proposed by a more orthodox rational-choicer, Philippe Van Parijs. He takes as his starting point Roemer's concept of status-exploitation. This was introduced as part of Roemer's analysis of exploitation in (no longer) existing socialism. He argued that the Soviet *nomenklatura* were exploiters simply by virtue of the power given them by their bureaucratic position, that is, independently of any skills or other productive assets they might have. Van Parijs proposes in effect an extension of the concept of status-exploitation, which should be defined 'in a purely negative fashion – as income inequality stemming from unequal distribution of "non-productive" assets', so that it 'covers all types of income inequality attributable neither to luck nor to choice nor inequalities in wealth or skills' (Van Parijs 1993, 114, 119: see also Roemer's discussion 1982, 243–9).

This move then permits a dramatic leap in the extension of the concept of class:

there should be as many class divides as there are factors systematically affecting the distribution of material advantages. The inhabitants

of developed countries and those of the Third World, graduates and the uneducated, males and females, blacks and whites, can then constitute pairs of classes just as much as those who own considerable wealth and those who do not. (Van Parijs 1993: 119)²¹

Carling does not rashly proliferate classes in this way, but rather concentrates on the two cases of gender and ethnicity. It is hard, however, to see what there is in his proposed refinement of the Marxist concept of class to allow him to resist such a move. Indeed, at one point he does apply Roemer's unequal-exchange model of exploitation (where one person is exploited if she has to work longer than another to obtain the same subsistence bundle) to the wage-earning household, arguing that male-female wage differentials give women an incentive to accept from their husbands what amounts to a wage for their domestic labour higher than what they could obtain on the labour-market but lower than the man's wage. Exploitation thus arises, since '[t]he lower earner (the woman on our basic presumption) is always working longer *in toto* than the man' (Carling 1991, 175).²² It seems that any income inequality becomes *prima facie* evidence of exploitation and class.

In either Carling's or Van Parijs's version of the Roemerian 'Revolution', the concepts of exploitation and class loses any real explanatory role. Of course, the distinction between explanation and description is a relative one. Carling's loose definition of class is inconsistent with *some* explanations of inequality, for example, those that seek to relate income inequalities to genetic differences. But how does rebaptising all social divisions as instances of class exploitation, as Carling implicitly and Van Parijs explicitly does, give us any insight into the nature of the mechanisms responsible for their existence?

There is an irony in all this. Like all sensible people Carling despises postmodernism. But one of the main thrusts of postmodernism in social and political theory has been to displace any notion of contemporary society as structured by a global antagonism between capital and labour and to conceive it instead as a plurality of different points of antagonism and struggle, none of which can claim any explanatory or strategic priority over the others. Thus Ernesto Laclau and Chantal Mouffe counterpose to what they call the '*classism*' of the Marxist tradition 'the autonomization of the spheres of struggle and the multiplication of political spaces' (Laclau and Mouffe 1985, 177–8). Carling is no post-Marxist. He plainly attaches great importance to the concepts of exploitation and class. But, by effectively equating them with social division, he seems in grave danger of ending up with the same pluralist

conception of the social – what he calls ‘divisionism’ – defended by Laclau and Mouffe.²³

Exploitation and oppression

Another way of putting this is to say that Carling conflates exploitation and oppression. Exploitation in the Marxist tradition is, as we have seen, the appropriation of surplus labour; it thus involves a relationship where the direct producers are compelled, whether by direct coercion or other means, to work to support not merely themselves and their dependants but also some other non-labouring group whose claim to a share of the fruits of the producers’ toil derives entirely from the control they exercise over the productive forces (including, in pre-capitalist class societies, the direct producers themselves). ‘Oppression’, by contrast, has come to serve as a kind of residual category referring to forms of social division other than exploitation. It may be defined very roughly as any state of affairs where a particular group of persons are denied equal treatment on the grounds of some characteristic which they are held to share in common. Racism, the subordination of women, discrimination on the grounds of nationality or sexual orientation are among the more obvious instances of oppression thus defined.²⁴

Now the classical Marxist claim, as we have already seen, is that exploitation explains (in some sense still to be specified) the various forms of oppression. Carling and Van Parijs in effect abandon this claim by redefining the concepts of exploitation and class so that they apply to every case of social division. This move is, if not impelled, certainly facilitated by Roemer’s reconstruction of the Marxist theory of exploitation, which tends to make any morally unjustified instance of economic inequality a case of exploitation. Even a writer as influenced by Roemer as Wright prefers to reserve the expression ‘economic oppression’ for such cases, and to argue that exploitation is a more specific relationship which ‘includes both economic oppression and the appropriation of the fruits of the labour of one class by another (which is equivalent to the transfer of the surplus from one class to another)’ (Wright 1985, 74; 1994, chapter 2).

But why start from here in the first place? Roemer’s attempt to improve on Marx has its origins in the debate among left-wing economists in the 1970s which pitted defenders of the labour theory of value against ‘neo-Ricardians’, that is, those who believed both that the labour theory was incoherent and redundant and that Piero Sraffa’s Ricardo-inspired models offered a better way of determining relative prices.

Without the neo-Ricardian assault on orthodox Marxist economic theory it seems hard to imagine Roemer so readily slipping on the garments of rational-choice theory and developing a game-theoretical model of exploitation (Fine and Harris 1979; Mandel and Freeman 1984; Steedman 1977; Steedman *et al.* 1981; Weeks 1981).

Now, I happen to think that the neo-Ricardian critique of the labour theory of value is mistaken. This is not the place to go into my reasons for preferring Marx to Sraffa, with the exception of one point directly relevant to Roemerian accounts of exploitation. Marx's neo-Ricardian critics mistake the nature of the labour theory when they interpret it essentially as a method of determining the relative prices of commodities. Rather, it is an account of the social equalisation of labour under capitalism. Competition compels producers constantly to compare their labour, and in particular the techniques it uses and productivity it attains, with that of other producers and to seek to match their rivals' technological innovations. Consequently there is a tendency in any given sector for the conditions of production in different units to resemble each other. It is this tendency, arising from competition, that is the basis of what Marx calls the law of value – in other words, of commodities exchanging according to their socially necessary labour-time, the amount of labour required to produce them in the average conditions of production prevailing in that industry (Rubin 1972).

Despite this tendency towards equalisation, labour in particular units of production will typically differ from that in these average conditions. Marx emphasizes this point by distinguishing between concrete labour – the particular productive activity issuing in a particular kind of output in a particular unit – and abstract social labour – labour as it is performed in average conditions, stripped of its particularities. Now, and this is the critical point, the differences between specific concrete labours have for Marx nothing to do with exploitation, which is exclusively a matter of the extortion of surplus-labour from wage-labourers by the capitalists who control the means of production. But Roemer collapses these two cases into each other. In his first unequal-exchange model, being exploited is a matter of working more than the average to earn the subsistence bundle of goods, being an exploiter working less. This implies that more productive workers exploit less productive ones.

Not simply does this contradict Marx, but, perhaps more important, it conflicts with our intuitions. It would mean – to use an example that I first employed during the great strike of 1984–85 but which is now, alas, of chiefly historical interest – that miners in the more productive coal-fields such as Yorkshire and Nottinghamshire exploited those in less

productive ones such as South Wales and Scotland. It seems implausible to allow geological differences to cause moral ones. Of course, one might be tempted to make Roemer's model the basis of an explanation of the fact that a majority of Nottinghamshire miners did not participate in the strike. But such an explanation would not pick out the right groups. Why should most Yorkshire miners, exploiters like their Nottinghamshire counterparts according to the Roemerian model, have stuck it out alongside their Welsh and Scottish fellows? In any case, the common fate of almost all miners, in all the coalfields, their livelihoods and children's futures destroyed in the general wreck of the coal industry, suggests a shared interest transcending differences in productivity. The Nottinghamshire scabs (to call a spade a spade) thus turn out to have been, not rugged exploiters, but pathetic dupes. This highlights a point to which I shall return – the salience of good, old-fashioned divide-and-rule in any explanation of social divisions other than class.²⁵

I conclude, then, that it is best to stick with the classical Marxist concept of exploitation as the appropriation of surplus-labour. Both this concept and the closely related one of class function as tools of what Roberto Unger calls 'deep-structure social theory'. They help, in other words, to specify the underlying and pervasive structures responsible for the phenomena observable in social life (Unger 1987, 88). How then do the concepts of exploitation and class contribute to the explanation of one sub-set of these phenomena, the various forms of oppression?

Another way of putting this question is to ask why class (as the effect of exploitation) should have primacy over forms of social division. Carling suggests that

social divisions can be ranked for importance on several different criteria, including

- (i) social pervasiveness
- (ii) extent of damage to individuals
- (iii) degree of inequality
- (iv) invidiousness of operation
- (v) contribution to the dynamic of change.²⁶

He argues that '(v) is by far the strongest line'. Certainly application of the other criteria produces equivocal results. Thus if we treat the extension of (i) as embracing social time as well as space, then women's oppression has as long a history as class exploitation (although of course for Engels this apparent coincidence reflected the emergence of the subordination of women as one aspect of the process through which

class exploitation arose),²⁷ but the same case cannot, it seems to me, be made out for oppression on the basis of race, nationality, or sexual orientation (Callinicos 1993b). To the extent that (ii), (iii) and (iv) can be easily distinguished, they may well produce results that rank some forms of oppression ahead of class, but it is not clear what this proves. Marx showed himself well aware that there were sections of nineteenth-century European society – probably most peasants, and many lumpen-proletarians, for example – worse off than at least some wage-labourers. He nevertheless accorded to the working class a strategic significance by virtue of the nature of their exploitation (Draper 1978).

This suggests that Carling is right to highlight (v), the role played by exploitation and derivative concepts such as class and class struggle in explaining social change.²⁸ Crucial here are the powers agents have by virtue of their class position. Class position after all is a matter of agents' mode of access to productive resources. It does not seem terribly implausible to argue that it is their access to these resources that is the most important single determinant of agents' ability to realize their goals. One reason why this is so has to do with the way in which exploitation makes the exploiters dependent in a crucial respect on the exploited. Wright makes the point very well:

In the case of economic oppression, the oppressors' material interests would not be hurt if the oppressed simply disappeared or died. In the case of exploitation, on the other hand, the exploiting class needs the exploited class. Exploiters would be hurt if the exploited all disappeared. Exploitation, therefore, binds the exploiter and exploited together in a way that economic oppression need not. It is this peculiar combination of antagonism of material interests and interdependency which gives exploitation its distinctive character and which makes class struggle such a potentially explosive force. (Wright 1985, 75)

Because being exploited consists in labouring to support the exploiters, the exploited have power over those who live off them. The most obvious illustration of this is the ability to disrupt or even paralyse economic life that wage-labourers have when they combine to withdraw their labour. It is not true that that oppression never involves any such relationship of dependence: men, after all, cannot do without women. But there is still an important difference between class exploitation and gender oppression, certainly under capitalism. The conditions of capitalist exploitation, since they involve workers being brought

together in relatively large units of production, make it both possible and necessary for the exploited to engage in collective action and indeed to build various forms of collective organisation if they are to resist their exploitation. But the prime site of women's oppression in modern society is the privatised household – a state of affairs which puts significant obstacles in the way of collective action.

I am not arguing that oppression is never a stimulus to effective action and organisation. The political experience of the twentieth-century would be a standing refutation of so silly a claim. But their lack of the distinctive cohesion and strength which derives from class position has had a peculiarly disabling effect on movements of the oppressed. Thus the most serious challenge to the racist structure of US society – the Black Power movement of the 1960s – was undermined by the fact that it sought primarily to mobilise the African-American minority, which both limited its mass base to (at most) 12 per cent of the US population and made the main focus of activity the inner-city community – precisely the terrain where the black radicals proved to be most vulnerable to the repressive and cooptive activities of the American state (Shawki 1990). The most sustained and inspiring anti-racist struggle of the past century, in South Africa, articulated the grievances and demands of the majority, but it is noteworthy that it only began to inflict decisive blows on the apartheid state when, in the 1980s, it could draw on the power of a new black labour movement (Baskin 1991; Friedman 1987).

So the primacy of class over oppression turns out to have to do, in the first instance, with change and with power. But any argument of the kind I am trying to sketch out here must offer some account of the role oppressions play in the prevailing form of class society, namely capitalism. Here it is important to avoid an overgeneralised approach which ascribes to the different kinds of oppression the same structure and the same causal role. So I shall concentrate on discussing two specific cases, one very briefly, the other at much greater length, which return us to Carling's analysis of social division.

The first is that of gender oppression. One difficulty I have with Carling's attempt to subsume women's oppression under Roemerian exploitation is that it verges on a trivialisation of the issue to reduce it to a matter of who cooks the evening meal or does the washing up. To talk of 'housework' or 'domestic labour' as an undifferentiated category is to obscure the real relationships. The decisive factor in disadvantaging women both inside and outside the home in modern capitalism is their particular and subordinate position within the family, and the prime

responsibility this requires them to take for child-care rather than any other form of housework. This role is, for example, crucial to explaining why women can expect to perform worse paid and less skilled jobs than men. It is in turn a consequence of the nature and function of the family in contemporary society and the whole gamut of women's oppression, which, of course, extends to embrace a whole range of non-economic issues such as ideology, sexuality and domestic violence, is best seen in the context of this institution.

The historical processes and social mechanisms that respectively produced and sustain this state of affairs require careful analysis. But if the salience of the family and child-care is acknowledged, then it becomes implausible to treat women's oppression as primarily a matter of individual interactions bolstered by a bit of socialisation. For child-care does not simply concern the welfare of the individuals concerned: it is a matter of the upbringing of a new generation which will some day (if they are lucky) enter the workforce. Modern industrial capitalism did not, as Marx and Engels predicted, abolish the family: it reshaped it and gave it a new role – the privatised reproduction of labour-power. Once things are posed in these terms then the distribution of benefits and burdens involved in women's oppression does not simply or perhaps even chiefly concern the members of the family itself but rather the contribution that women's domestic labour plays in keeping capitalism itself going.²⁹

Divide and rule

The second case I wish to consider is that of race and ethnicity. Less interesting than the bulk of Carling's lengthy but rather inconclusive discussion of this form of social division is a striking passage at the end of his examination of the four basic types of relationship between ethnic and racial groups – incorporation, incapsulation, exclusion and coexistence:

Among the four group interrelationships appeared at this level of abstraction, *co-existence is the only arrangement consistent with the psychological well-being of all members of a society split between ethnic or racial groups*. So if one accepts that ethnic or racial difference are unlikely to disappear, co-existence looks like the best of a bad job. But because co-existence is tense, it is fraught, since the possibility always remains that the incipient hatred the in-group feels against the out-group can be mobilized, in a whole-hearted attempt to inflict

for real the ethnic damage which may well be lurking in the ethnic imagination.

If it is utopian to believe that ethnic difference will ever be eradicated, it must be an urgent task of realism to discover what the conditions are which turn ethnic difference into ethnic bloody conflict, and then try at all costs to avoid them. (1991, 313)

One only has to utter the name 'Yugoslavia' to remind oneself of the direct and urgent relevance of the considerations offered in the last paragraph cited. And at a fairly straightforward level the political good sense of what Carling calls 'realism' is undeniable. But when we seek to construct a theoretical explanation of ethnic and racial differences Carling's assumption in effect that such differences must simply be taken for granted as historically given is highly unsatisfactory. For it ignores the historical research that has revealed both the contingent, socially constructed character of these identities and the role played in their formation by the 'invention of tradition' – the elaboration of historical mythologies to demonstrate the primordial existence and justify the political claims of particular ethnic and racial groups. Here we have perhaps an example of how Carling's dissolution of exploitation into social division leads him to abandon explanation for the mere descriptive recording of differences and (at best) the exploration of their consequences (Anderson 1983; Gellner 1983; Hobsbawm and Ranger 1983).³⁰

It is too easy to take nationalist ideologues' claims at face value, and to see ethnic conflict as an upswelling of long-standing hatreds that are liable, unless carefully managed, to surface at any moment. The case of Yugoslavia suggests rather a different picture. Noel Malcolm, as Foreign Editor of *The Spectator* (hardly likely to come under suspicion as a closet Marxist), has strongly attacked attempts to explain the Bosnian war by invoking 'ancient ethnic hatreds':

a closer inspection of Bosnia's history will show that the animosities which did exist were not absolute and unchanging. Nor were they inevitable consequences of the mixing together of different religious communities. The main basis of hostility was not ethnic or religious but economic: the resentment felt by the members of a mainly (but not exclusively) Christian peasantry towards their Muslim landowners. This hostility was not some absolute or irreducible force: it varied as economic circumstances changed, and was also subject to political pressures which significantly altered the attitude during the first half of the nineteenth century. (Malcolm 1994, xxi)

The closest that we have come to a detailed study of the break-up of Yugoslavia highlights the role of political entrepreneurs – figures such as Slobodan Milosevic of Serbia and Franjo Tudjman of Croatia – in revitalising nationalist myths and playing on popular fears and insecurities; it also reveals the cumulative logic of ethnic cleansing in Bosnia, where the massacres and expulsions initiated by relatively small groups of Serb and Croat nationalists supported and directed by the regimes in Belgrade and Zagreb unleashed a chain reaction which left most of the rest of the population (irrespective of their national affiliations) with little choice but to adopt the same practices if they were to survive (Silber and Little 1995, chapter 22).

But the Yugoslav case is also striking because the most important single actor in the entire process, Milosevic, whose campaign for a Greater Serbia was probably the chief factor in precipitating the break-up of Yugoslavia, was by all accounts uninterested in the actual ideology of Serb nationalism: he seems to have adopted it quite cynically during 1987–88 as a means of establishing his political dominance, and just as readily sloughed it off when it became inconvenient in 1994–95, abandoning to their fates the Bosnian and Croatian Serbs he had previously armed and encouraged.³¹ More generally, the rapid growth of separatist nationalisms in Yugoslavia in the late 1980s must be set against the background of a profound social and economic crisis characterised by mass unemployment, hyper-inflation and growing regional imbalances which both heightened popular insecurities and encouraged unscrupulous politicians such as Milosevic and the Slovenian Communist leader Milan Kucan to adopt nationalist strategies that played on and channelled these insecurities (Blackie 1991).³²

What this suggests is that any understanding of ethnic and racial divisions must draw on that ancient adage of statecraft, coined by the Emperor Tiberius: *divide et impera* – divide and rule. The claim that it is their role in causing conflicts among, and therefore weakening the exploited that explains, for example, racism as a long-standing part of the Marxist tradition. Thus take Marx's famous letter to Meyer and Vogt on 9 April 1870 on the division between British and Irish workers in Victorian society in which he argued: 'This *antagonism* is the *secret of the impotence of the English working class*, despite its organization. It is the secret by which the capitalist class maintains its power. And that class is fully aware of it.' (Marx and Engels 1965, 236–7; Callinicos 1993b, chapter 5).

The obvious objection to divide-and-rule as an explanation is that it seems to imply, as is suggested by the last sentence quoted above, the existence of a ruling-class conspiracy to set different groups of workers

against one another. Well, plainly conspiracy will not do if it is treated as the only mechanism responsible for ethnic and racial divisions. But it does not follow that self-consciously divisive strategies pursued by actual or would-be rulers do not exist and make some contribution to the outcome. Consider, for example, these splendidly cynical remarks by that most lucid of Tory imperialists F.E. Smith when in 1925 he was (as Lord Birkenhead) Secretary of State for India:

In the ultimate analysis the strength of the British position is that we are in India for the good of India. The most striking illustration of the truth of the position is supplied by the infinite variation of nationality, sect, and religion in the subcontinent. The more it is made obvious that these antagonisms are profound, and affect immense and irreconcilable sections of the population, the more conspicuously is the fact illustrated that we, and we alone, can play the part of composers. (Campbell 1983, 733–4)

Smith's biographer comments: 'A franker exposition of the old Roman principle of "Divide and Rule" it would be hard to find.' He goes on to quote from another letter in which Birkenhead declares: 'I have always placed my highest and most permanent hopes upon the eternity of the Communal situation' (Campbell 1983, 734). The growth of Hindu communalism in India in recent years – a development encouraged both by out-and-out fascist parties such as the BJP, RSS and Shiv Sena, and by the supposedly more secular Congress – suggests that, in this respect as in so many others, the traditions of the Raj have been continued by its post-colonial heirs.

Conspiracy from above is, however, insufficient on its own to explain racial or ethnic divisions. Erik Wright, Andrew Levine and Elliott Sober argue, against extreme anti-functionalists such as Jon Elster and Anthony Giddens, that it is legitimate for social explanations to take into account what they (following G.A. Cohen) call 'dispositional facts' such as the fact that racism has 'beneficial effects for capitalism' because of 'its consequences for working-class disunity (divide and conquer)'. Thus, 'unless it were a dispositional fact about a society that racism would produce the effects it does, what capitalists do, intentionally or not, to encourage racial divisions would produce different outcomes from their actual consequences' (Wright *et al.* 1992, 63–7).

The moral Wright, Levine and Sober draw from this argument is that social explanations frequently require reference to both dispositional facts as 'real properties of social systems' and the strategies pursued

intentionally by individual or collective agents. It should be noted that the intentional actions responsible for the emergence of some dispositional feature may have nothing to do with the beneficial effects it turns to have for capitalism. Some racial or quasi-racial antagonisms (for example the British–Irish conflict discussed by Marx) may have their origins in labour-market practices by workers and employers that had no large social outcomes in mind. Moreover, once formed, the conflict may be sustained by mechanisms whose existence has nothing to do with such consequences.

One such mechanism might be the ‘psychological wage’ which W.E.B. Du Bois argues poor whites enjoyed in the American South during the Jim Crow era: wage-labourers or poor farmers they found, he suggests, in their status as members of the dominant race, an imaginary compensation for their material deprivations that set them apart from blacks in comparable class positions (Du Bois 1969, 700–1). As another great historian of the postbellum South, C. Vann Woodward, put it, ‘[i]t took a lot of ritual and Jim Crow to bolster the creed of white supremacy in the bosom of a white man working for a black man’s wages.’ From the perspective of divide-and-rule, it is interesting that the consolidation of Jim Crow – in the shape of the disenfranchisement of most blacks and many poor whites and the elaboration of systematically segregationist legal codes – came at the end of the 1890s, after the defeat of Populism, a movement whose most radical leaders in the South (Tom Watson, for example) sought, as Woodward shows, to unite black and white farmers and labourers against the dominance of Northern finance capital (Woodward 1970, 211).

All of this suggests that explaining racial and ethnic differences is a complex affair. In arguing that it is nevertheless possible to do so in a way that traces these differences back to the class structure of capitalist society I do not wish to dismiss them as fictions or epiphenomena, of no import to anyone engaged in social theory or political practice. The most superficial inspection of our world shows that racial and ethnic conflicts have a terrible reality of their own which cannot be wished or explained away. The kind of approach I have sought to sketch out here, nevertheless, is of importance in stressing two points that tend to be obscured by Carling’s discussion. First, eternising these divisions, treating them as primordial and pre-given, blinds one to the dynamics of the conflicts to which they give rise. Second, the tragic quality of these conflicts is only heightened by the recognition that frequently they set against each other people with the same class interests, whose entirely justified pain, fear and anger is thus misdirected away from those

responsible for their plight. Grasping these points does not make it any easier to address or overcome ethnic and racial antagonisms, but any theoretical or practical approach which fails to take them into account will find itself burdened by even greater difficulties than necessary.³³

Conclusion

This study has followed a long and tortuous path, so it may be worth concluding with a summary of where it has at least been trying to go. My concern has been with historical materialism as an explanatory theory that invokes two chief mechanisms – structural contradictions between the forces and relations of production, and class struggle arising from relations of exploitation. In the first part of this chapter, I argue that Ellen Wood is wrong in seeking to rely exclusively on the second of these mechanisms and that Alan Carling is right, when he tries to construct a model of the transition from feudalism to capitalism which seeks to integrate both these mechanisms. In the second part, however, I argue that Carling's reliance on Roemerian concepts of exploitation effectively evacuates class theory of its explanatory content, making class and exploitation synonyms for social inequality in general. Thus, to the extent that Wood seeks to defend a robustly explanatory conception of class against Rational Choice Marxism, she is right and Carling is wrong (1990, 45–59).

In Marxism at least, explanation, as they like to say these days, goes all the way down. The failure to appreciate this of a writer like Carling, who has in the past few years offered a number of interesting and suggestive refinements of the Marxist theory of history, is probably a sign of the times. What he calls 'divisionism' – a view of society as fragmented into rival groups based on national, religious, racial, gender and even sometimes class differences – has erected itself into common sense. Carling's case indicates the power of this view to capture the imagination even of critical theorists: 'This does not alter the fact that divisionism is intellectually and politically hopeless.'

Notes

1. An earlier version of this study was discussed at the *Political Theory Workshop* at the University of York. I am grateful to all who took part for their comments and especially to Matt Matravers, Susan Mendus and Peter Nicholson.
2. Cohen (1978) has now assumed something of the status of a classic. I offer some reservations about, and (I like to think) refinements of Cohen's interpretation of historical materialism in my (1987), especially chapter 2.

3. Though adherents to this view are not required to deny that in specific cases one kind of social division may be more important than others. For a vigorous and polemical defence of such a pluralist conception of social inequality from a Weberian perspective see Parkin (1979).
4. See Roberts's definitive (1996) study. I refer to Analytical Marxism in the past tense because, for reasons explored by Roberts, it appears to have disintegrated as a coherent current.
5. Wright lists the principal practitioners of Analytical Marxism – at least in the sense of attending the annual meetings of the shy-makingly titled Non-Bullshit Marxism Group – as Pranab Bardhan, Samuel Bowles, Robert Brenner, G.A. Cohen, Jon Elster, Adam Przeworski, John Roemer, Hillel Steiner, Robert Van der Veen and Philippe Van Parijs (1994, 14).
6. Carling (1986), Wood (1989), Carling (1990), Callinicos (1990) and Wood (1990).
7. See Callinicos (1989a), chapter 2 for my version of this argument.
8. See, in addition to my contribution to the RCM debate, Callinicos (1995: 128–40) and Harman (1990).
9. Callinicos (1990: 113–14). The label 'political Marxism' was first applied by the French Marxist historian Guy Bois to Brenner, to whom he attributed 'a voluntarist vision of history in which the class struggle is divorced from all objective contingencies', in Aston and Philpin (1985: 115).
10. She also offers an interpretation of the decline of the Roman Empire as 'a matter of relations of production adapting to the limits of productive forces', (1990: 123) (and see generally, 1990: 122–4). This is too large a matter to encompass within the limits I have set myself in this study, and without considering two fundamental contributions on this subject: Bois (1989) and Wickham (1984).
11. For much more argument along these lines, see Callinicos (1995, chapters 3 and 4 and especially 151–65).
12. Elster too has come to acknowledge the role played by what Durkheim called 'collective representations' in social life: see, for example Elster (1989). As I put it elsewhere, 'In the space of a decade, Rational Choice Marxism has repeated the movement from the positivist to the voluntarist theory of action, from instrumental rationality to normative integration, whose history [Talcott] Parsons has traced across two and half centuries of Western social theory. Truly, those who ignore the lessons of history are condemned to repeat them' (1993b, 59).
13. See especially Cohen (1978: chapters VI, VIII, IX, X), and the exchange between Elster and Cohen on 'Marxism, Functionalism, and Game Theory', reprinted in Callinicos (1989b). For such an attempt at reduction, see the Introduction to Roemer (1986, 5–6). Carling's 'identification of Analytical Marxism with methodological individualism' is criticized by Wright (1994, 190). In more recent work Carling effectively withdraws it: see his (1990, 102–3).
14. See, for example, Wood (1989, 69–70). In invoking both structures and individuals Brenner's method is very similar to the model of social explanation developed and defended in Callinicos (1989a, chapters 1–3).
15. Brenner's claim that the feudal economy was characterised by a tendency towards stagnation is strongly contested by his critics: see especially, Harman (1990).

16. In effect summarizing the much fuller version of this argument in 1991. See also (1990, 52–6).
17. Two other contemporary versions of evolutionary theory, respectively Marxist and Weberian, are offered in Bertram (1990) and Runciman (1989). Critical discussions may be found in Casal in Bertram and Chitty (1994) and Callinicos (1995, 116–25).
18. Carling, moreover, rejects Bois's requirement that 'every repetition of the feudal cycle in a given country brings that country progressively closer to capitalism' (1986, 58). One issue I have ignored in considering Carling's proposed synthesis is its acceptance of the assumption central to Brenner's account of the transition that the decisive breakthrough to capitalism took place in agriculture. For criticisms of the implied neglect of the development of urban mercantile capitalism see especially Harman (1990).
19. Compare G.A. Cohen's discussion of whether exploitation is unjust because it is a consequence of an unjust initial distribution or because it consists in an unjust extraction of surplus (1995, chapter 8). Cohen argues plausibly that it is because of both. Carling's argument, however, that the labour-contribution principle flows from a prior commitment to equal welfare provides the basis of a rebuttal of Cohen's claim that the principle depends on acceptance of the Nozickian idea of self-ownership and excludes the needs of non-producers: see (Carling 1991, chapter 6).
20. Personal communication.
21. Cohen, with what seems to me a doubtful judgement, calls Van Parijs's essay 'brilliant' (1995, 161, no. 30). A comparable proliferation of classes is proposed by Erik Wright, though in a considerably more carefully argued way, in his (1985).
22. Carling takes a lot more argument than the summary above suggests to reach the conclusion that this is a case of exploitation but the crucial feature of the situation is the alleged occurrence of an unequal exchange, see (1991, 175–81).
23. Carling has indeed acknowledged this, pointing to the similarities between his 'divisionism' and that of some postmodernists: see 'Rational-Choice Marxism and Postmodern Feminism' in Carver and Thomas (1995). Of course, a central issue here that is not discussed in this chapter is the empirical question of whether or not class divisions are declining in contemporary society: see Callinicos and Harman (1987).
24. This definition is my own, but it seeks to capture a fairly widespread way in which Marxists distinguish between exploitation and oppression. One obvious reason why it is a very rough one is that it does not capture the intuitive distinction between genuine cases of oppression and cases where, in any form of society, it probably would be thought in the interests of a specified group to deny it equal treatment in at least some respects: children are an obvious example. The definition makes oppression a normative concept, but since this is true, I believe, also of exploitation, there is no point in worrying too much about it.
25. These criticisms of Roemer are developed at much greater length in Callinicos (1985).
26. Personal communication.
27. This is, of course, an immensely controversial subject. For a powerful recent attempt to vindicate Engels in the light of modern research, see Harman (1995).

28. See de Ste. Croix (1981, 90–1).
29. I am well aware that what is said in this and the preceding paragraph amount to a set of dogmatic assertions rather than an argument, but, for various reasons, the principal instance of non-class division on which I wish to concentrate in this study is race and ethnicity, not gender. The analysis I have merely sketched out here is developed in compelling detail by German (1989), see also Brenner and Ramas (1984). Carling does not wholly ignore the issues raised by this analysis, but considers them from the point of view of the consequences of individual household members' optimising strategies, leaving unanalysed the objective context of their choices: see (Carling 1991, chapter 7, and especially 174).
30. Carling is aware of this literature (see Carling 1991, 331–2 and footnotes) but does not seem fully to have considered its implications.
31. See *ibid.*, chapters 1, 2, 27. There is an interesting discussion of Milosevic's and Tudjman's motives in Glenny (1996) and in the correspondence provoked by this review.
32. This is not to say that there were no sincere nationalists among the political leaders implicated in the break-up of Yugoslavia. Tudjman's espousal of a Greater Croatia was all too sincere. But here again one must ask about the kind of conditions and pressures which made this seem like a plausible, even desirable, strategy for most Croats.
33. I am aware that, to simplify matters, in the foregoing discussion I have ignored the significant differences between racism and the various divisions covered by the fairly unsatisfactory concept of ethnicity. For more specific Marxist treatments of two forms of division see Callinicos (1992) and Harman (1992). The analytical and political inadequacies of the concept of ethnicity form one of the main themes of No Sizwe (1979).

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7

Progress and Technology in Habermas's Theory of Social Evolution¹

Graeme Kirkpatrick

Introduction

This study confronts Habermas's theory of social evolution with the development of 'personal computing' as a socio-technical phenomenon with economic, political and cultural significance. It begins, in the first section, with an overview of Habermas's theory, in which the place of technology and the technical in his model of social and historical change are emphasized. The second section describes the emergence, over the last two or three decades, of the personal computer (PC). The origins of this machine in a specific sub-culture are stressed and some relevant peculiarities of the members and practices of that sub-culture are discussed. It is argued throughout that Habermas's differentiated concept of the social, especially as modified by Harry Kunneman (1990) offers a suggestive and nuanced perspective on this technological development. In developing this idea, I employ a strategy recommended by Habermas, namely, that of clarifying historical and social reasons for the failure of a set of ideas, in this case design principles for the PC interface, by exploring the counterfactual state of affairs.

Habermas and the evolution of society

Habermas situates his account of scientific and technical progress in the context of a theory of social evolution. At the same time, however, he counsels caution in the use of evolutionary concepts and categories (1984, 170). He is not interested in developing an overarching

'super-historical theory' that can account for all epochal transitions. Instead, he suggests that assuming the existence of an evolutionary logic at work in certain key dimensions of society may prove fruitful for sociologists seeking to identify the developmental processes that explain actual social changes. In his early work, Habermas is explicit that his reflections on social evolution have the goal of clarifying the role of thought about the past in our practical present. It is integral to our humanity that, as in our discussions of our own past, we discern a practical direction with moral significance in that of our society. Habermas's theory of social evolution is conceived to facilitate such discussions (1979a, 8).

His theory is not intended to take the place of Marx's philosophy of history, but it is supposed to preserve and reinvigorate Marx's critical intentions. Habermas abandons the project of a science of the historical totality, in which science and technology play the leading role, while drawing on the evolution metaphor to provide structure for our efforts to find meaning and significance in past events. Science does, though, remain central to Habermas's model. His description of history in terms of a hierarchical series of social formations directs our attention to the crucial role of learning in history: 'The heuristic usefulness of the biological model consists in its directing our attention to the evolutionary learning mechanism' (1984, 171). Learning processes define the problematic of social studies; the problem of how and why people learn or fail to learn is the question that defines the field of social science. This is made most clear when he writes:

the fundamental mechanism for social evolution in general is to be found in an automatic inability not to learn. Not learning but not-learning is the phenomenon that calls for explanation at the socio-cultural stage of development. Therein lies, if you will, the rationality of man. Only against this background does the overpowering irrationality of the history of the species become visible. (1979b, 15)

The evolution metaphor points us towards an analogy between historical development and subjective learning processes. Deliberately retrieving a strategy of argumentation from the Enlightenment,² Habermas argues that social evolution can be understood on an analogy with the moral and intellectual development of individuals growing to maturity. He draws on the way in which the metaphor of evolution and the analogy with ontogenesis are mutually re-enforcing to make an

implicit case for the rationality of describing social change in evolutionary terms:

If the survival ability of organisms is a test case for the learning processes of the species then the corresponding test case for societies lies in the dimension of the production and utilisation of technically and practically useful knowledge. (1984, 173)

It is in this context that he refers to moral learning processes as 'the pacemakers of social evolution' (1984, 120, 160). And it is on the basis of this direct appeal to the practical concerns that we invest in all discussion of the past that Habermas proceeds to draw upon evolutionary concepts in his mature social thought. In *The Theory of Communicative Action* (1990; 1992b), Habermas takes from evolutionary theory the concepts of *differentiation*, *self-maintaining systems* and *selection*. He uses these concepts in conjunction with an action-theoretic account of society to theorise change in contemporary societies. This framework is developed in such a way as to preserve scope for the sociological effectiveness of attitudes towards historical and other culturally transmitted meanings.

Action orientations and social differentiation

Habermas bases his conception of society on a typology of action. Of particular importance here is the distinction between the communicative and strategic action-orientations. Communicative action is action orientated towards reaching an understanding with another person, while strategic action is action orientated towards successful attainment of an objective. Communicative action has a kind of priority in that no social co-ordination would be possible without some prior acts of communication aimed at reaching understanding. Only such actions could enable social actors collectively to define the ends of co-ordinated instrumental-strategic actions. Communicative action in the purest sense involves agents participating, with others whom they recognize as equally competent, in discussions aimed solely at establishing the truth. The paradigm case of pure communicative action is the activity of scientists and scholars. Strategic action, in contrast, is the kind of action that is instrumentally focused on the achievement of an objective.

On the basis of these action-theoretic distinctions, Habermas develops a theory of the variable significance that might attach to social actions. He argues that social action becomes 'segmented' into domains where either communicative or strategic orientations predominate.

Correspondingly, actions may appear significant under one of two aspects: the lifeworld perspective, or that of the system. Lifeworld developments, based on communicative action, are social actions viewed from the 'internal' standpoint of agents. Looked at in this way, the actions' significance lies in the meaning they have for the agents, which is a function of the agent's cultural context (1992a, 25). System developments, based on strategic action, are social actions viewed from an 'external' perspective. The strategic action orientation typically leads actors to perform actions whose broader significance escapes them. The actors remain focused on a narrow, instrumentally defined objective. The significance of such actions is disclosed at the level of an objectivating social science that explains them functionalistically in terms of the material reproduction of society. Correspondingly, events at the levels of lifeworld and system have different relevant modes of explanation – the first being more hermeneutic and meaning-orientated, the second more objective and social-scientific.

Habermas writes that his 'heuristic proposal' is that, 'we view society as an entity that, in the course of social evolution, gets differentiated both as a system and as a lifeworld' (1992b, 152). The primary locus of social evolution, then, is the differentiation of 'system' and 'lifeworld' dimensions of human social existence. As indicated above, these are linked to specific modes of rational action and to our assessment of the consequences of that action in light of perspectives taken on social phenomena. These perspectives can incorporate a concern with the hermeneutic processes whereby the lifeworld is preserved, maintained and developed, or they can be motivated by a concern to objectivate systematised features of social reality and explain them functionalistically in terms of the material preservation of the social formation. Social evolution also goes on, however, within each of these levels of the social formation. Habermas writes that, 'system and lifeworld are differentiated in the sense that the complexity of the one and the rationality of the other grow' (1992b, 153). Evolution at the level of system-processes can be measured by increases in what Habermas calls society's 'steering capacity'. Rationalisation of the lifeworld is indicated by the extent to which culture, society and personality system are separated from each other (1992b, 152).

Systematisation – the removal of organised sub-systems of collective action from regulation by institutions that embody discursive deliberation concerning their rightness – means that much of our experience of modern life is governed by strategic imperatives. This can be traced to rationalisation processes that characterise the history of Western societies.

The mechanisms for communicative-rational, consensual resolution of system-level problems came under pressure with the break up of traditional worldviews and religious systems of legitimation. This pressure resulted in the (functional) emergence of 'steering media'. Institutions were formed on the basis of media that 'decoupled' action from the goal of reaching understanding and infused it with 'generalised instrumental values such as money and power' (1990, 342). Habermas argues that aspects of the lifeworld are detached in this way by the development of money and power. These 'steering media' replace consensus-oriented communicative action in determining the course of social development. Individuals and organisations do what the steering media dictate – they act to maximise their own returns in terms of money and power – instead of deliberating with others to decide what it would be best to do.

In contrast, Habermas describes evolution at the level of the lifeworld as rationalisation. This has been captured succinctly by Hugh Baxter:

The rationalisation of the lifeworld brings, in the sphere of culture, an increasing reflexivity of cultural tradition and an institutionalisation of criticism and research; in the institutional sphere, the development of democratic political institutions through which policy emerges more from debate than fiat, and in the 'structures of personality' the universalisation of basic education, and the increasing importance of more 'formal', higher-level competencies, both cognitive and moral. In each sphere, the rationalisation of the lifeworld brings increased emphasis upon criticism and rational argument. (Baxter 1987, 51)

Progress in the lifeworld is linked with moral learning processes and can be illuminated with reference to the analogy with the ideal of a fully developed, morally competent individual. The moral learning processes of a society should produce individuals who are to a greater or lesser extent capable of realizing the potential of communicative action as a source of normative regulation of social interaction:

...a lifeworld can be regarded as rationalised to the extent that it permits interactions that are ... guided ... – directly or indirectly – by communicatively achieved understanding. (Habermas 1990, 340)

As systemic aspects of social life separate off from cultural ones, it is the different ways in which the two aspects lock together which serve to define the 'evolutionary level', or 'organisational principle' of society.

Specific worldviews, which take shape at the level of the lifeworld, enter into 'institutional complexes' when they prescribe courses of action that are functional for system maintenance and development (Habermas 1984, 160–1). Those elements of worldviews that become sociologically determinate in this way are to be explained with reference to their contribution to social stability and system-boundary maintenance (the preservation of the society's identity):

... evolutionary advances are marked by institutions that make it possible to solve whatever system problems are producing a crisis, and to do so in virtue of features that derive from their embodiment of rationality structures Evolutionary learning processes are understood as the implementation of a learning potential. And this process can in turn be causally explained in terms of structures and events. (1992b, 314)

According to Habermas, cultural worldviews, or elements of worldviews, are periodically 'selected' in this way for their capacity to overcome systems-level crises, in a process that he describes as '... the selective exploitation of culturally available cognitive potentials' (1992b, 303). They are then institutionalised and play a part in 'steering' the system as a whole. Perhaps the classic illustration of this would be the Protestant sects of seventeenth-century Europe, described by Max Weber in his, *The Protestant Ethic and the Spirit of Capitalism* (Weber 1974). They contributed ideas which were selectively retained by the juridico-legal systems of the West and which stabilised and regulated the burgeoning process of capitalist development.³ Ironically, this system promoted an increasingly secular society in which religious principles soon lost their importance.

Colonisation

Habermas's conception of a variety of action-orientations, in the context of his evolutionary model of society, enables him to combine strategic and communicative action in a complex, dialectical interplay. Strategic action reaches in its consequences beyond the intentions of individuals and can only be explained in terms of a systems-level analysis that makes use of functional explanations. Habermas is able to insist, however, upon the priority of communicative action, since action oriented towards reaching an understanding with others is a condition of possibility of all inter-personal co-ordination. The communicatively constituted lifeworld, when viewed from the standpoint of Habermas's

overall sociological functionalism, then appears as a boundary which discloses the identity of the social formation. Social evolution is a result of complementary developments in the two dimensions of social action – lifeworld rationalisation and system differentiation.

However, Habermas's diagnosis of modern societies suggests that they are increasingly skewed in their direction of development. The critical leverage in Habermas's system comes from his thesis that evolution has proceeded more rapidly at the systems-level than at the level of moral learning processes in the lifeworld. There is, then, a tension between the two levels which needs to be addressed by finding the right balance between them in practice. Here, Habermas proposes to clarify Weber's insights concerning the paradoxical character of increased rationalisation in modern societies. Following Nietzsche, Weber had decried the subjective experience of life in a 'rationalised' society. Such a life promised little in the way of meaning and threatened to engulf the individual in an 'iron cage' of procedures and routines. This worry led Weber to seek a more neutral framework for his interpretation of the direction of social change. This led in turn to the analogy with natural evolution.⁴ As Habermas puts it:

The paradigm for the interpretation of cumulative changes was no longer the theoretical progress of science but the natural evolution of the species. With this the thematic of rationalisation was transformed into that of social evolution. (1990, 151)

Only such a change of paradigm could enable Weber to generate an account of the paradoxical effects of rationalisation processes for modern societies – the sense in which they both liberate and ensnare. A straightforward, linear conception of reason as progressive would not capture this.

Habermas's 'internal colonisation' thesis posits a novel sense in which contemporary rationalisation processes are contradictory rather than complementary. Filling out the evolutionary model with his action concepts, Habermas suggests that the role of communicative action in facilitating the social integration of individuals is steadily being eroded. Increasingly, areas of social action that ought to be regulated by norms based on the search for agreement are instead 'steered' by the demands of efficiency and monetary reward. Habermas clarifies this as follows:

... there is competition not between the types of action oriented to understanding and to success, but between principles of social

integration – between the mechanism of linguistic communication that is oriented to validity claims ... and those delinguistified steering media through which systems of success-oriented action are differentiated out. (1990, 342)

The antagonism here lies at the level of how we understand the legitimacy of our actions. It could only be resolved by the selective institutionalisation of new, alternative normative structures incorporating more democratic, discursive–deliberative procedures to supplant the steering role of money and power. In short, what Habermas calls a stronger public sphere is necessary to prevent capitalist societies from digging their own graves. Habermas's point is that so long as our actions are increasingly justified only by their successful conformity to the demands of steering media, instead of with reference to norms that are open to rational dispute and deliberation, we will leave ourselves vulnerable to the steady dissolution of the lifeworld. Ultimately this will mean that, although the human species may physically survive, humans as we know them may not, since the pre-condition for the social exchange of meanings is that the lifeworld dimension should continue to play some integrative role.

Critical theory and the neutrality of science

Habermas idealises science as the paradigm case of free and open communication in modern societies. In other social contexts, money and power shape human conduct so that the search for agreement becomes merely a surface appearance, but a shared orientation to the truth binds the community of scholars and scientists together; it is the means of their social integration. As Esteban points out, this positive view of science is the motor of Habermas's notion of progressive rationalisation (1991, 105).

Critics of Habermas point out that this attitude towards science radically distinguishes his work from that of an earlier generation of Frankfurt theorists (Eckersley 1990). Habermas proposes to understand society as a system with discrete boundaries and one whose primary function is survival through the maintenance of these boundaries. He appears, therefore, to have embraced a conception of the society/nature relationship according to which it is essentially governed by strategic imperatives related to survival. In his development of the evolution metaphor in connection with social processes, Habermas accepts basic assumptions that would have repelled his Frankfurt School forebears. Adorno and Horkheimer, for instance, decried the way in which the

struggle for survival against a hostile nature had become central to our experience of the world, permeating our most developed systems of knowledge (1986, 3). Technology is implicated in this as it constitutes both the medium through which we represent nature to ourselves and the means by which we exert control over it. Since he views nature instrumentally, or pragmatically – from the standpoint of human needs and interests – and incorporates into this perspective the dominant, scientific conception of nature as both law-governed in its behaviour and morally neutral, Habermas seems to be committed to an uncritical attitude towards technology. Technology embodies our best understanding of the world and represents the development of tools that will enhance human control over the world.⁵

For Habermas, the development of technology is sociologically unproblematic in itself; it is one manifestation of the modern extension of the learning processes that he considers to be the ‘pacemakers of evolution’. It feeds into the differentiation of the systems-level of society and, as such, makes possible further gains in the functioning of the social system as a whole. As we have seen, such system differentiation is only problematic when it involves threats to other, non-systemic modes of social integration. The way to offset such threats lies not in opposing technology, or in seeking to influence its direction of development, but in ensuring that democratic structures exist that can mediate the implementation of technological solutions (Habermas 1970, 79). Habermas acknowledges the danger of colonisation when the power of experts is significantly enhanced by people’s reliance on technological systems they do not understand. The idea that technology, in particular the technology characteristic of modern social development, may be contentious in itself, however, has no place in his system.

This blind spot of Habermas’s theory has been criticized, from the standpoint of a concern with environmental issues, by Harry Kunneman (1990). Kunneman points out that in the development of his theory of social evolution Habermas has moved away from early remarks (for example, 1979b, 101) wherein he claimed that science and technology played an ideological role in contemporary societies, distorting communication processes. Consequently, Kunneman observes, Habermas’s only criticism of the impact of science on society in *The Theory of Communicative Action*, concerns the negative impact of a highly specialised ‘expert’ culture, which has the effect of fragmenting contemporary consciousness to the extent that ‘totalisation’ has become impossible. Kunneman proposes modifications of Habermas’s framework that bring the more problematic aspects of the technological appropriation of scientific knowledge within

the critical range of Habermas's theory.⁶ Kunneman is not concerned to revive the ideology thesis of the earlier Habermas, but he does want to block Habermas's tendency to affirm the neutrality of technological implementations of scientific knowledge. Such a tendency, he rightly discerns, actually threatens to deprive Habermas's theory of much of its relevance in an era when technological change is rapid and increasing numbers of people, perhaps with environmentalist concerns, feel menaced by it. Kunneman develops his case by driving home the distinction between science and its technological applications:

In reality there is a big difference between scientific insights formulated within a specific paradigm or research programme on the one hand, and technical solutions for concrete problems in the domain of material reproduction on the other hand. It is this difference that is neglected by Habermas ... (1990, 121)

In conceding the neutrality of science and acknowledging that the characteristic rationality orientation of systems-level processes is instrumental-strategic, Habermas seems to hand over the whole issue of technological progress to would-be apologists for capitalist technocracy. What seems to be needed instead is a development of our critical awareness of science and its technological applications and especially of the social and political choices that we are failing to make as a community in connection with them.

Kunneman proposes to modify Habermas's framework to take account of this failing. Kunneman's suggestion is that we can clarify the distinction between neutral scientific developments and their more problematic technological employments. In this way, a space is created within Habermas's framework, wherein the distorting effects of technocratic rationality and other social phenomena can be described and explained. Science then retains the pristine qualities and favourable associations assigned to it by Habermas, but technology can be seen as a separate and distinct question with social dimensions. These latter may connect with the issue of internal colonisation in ways that help us to reconstruct the critical attitude towards technology and technocracy associated with traditional critical theory and with Habermas's own earlier work.

Kunneman argues that there are three differences that mark off pure, or experimental science from technology:

1. Scientific theories can be tested in 'closed' experimental conditions. Such testing will be insufficient to the task of developing

technological applications. Technology has less 'closed' experimental conditions of development.

2. More 'open' testing to see if a theory or finding has technological applications for industry is contingent upon, or conditioned by an 'extra-scientific relevance horizon'. Non-scientific interests will determine this relevance horizon. Technologists working for industrial corporations will develop applications that serve the drive for profit and maximal productivity, rather than universally agreed goals arrived at by a process of rational deliberation and intersubjective consensus.
3. Further social conditions then constrain which technological utilisation of science is developed for technological use. Examples of this might be the politically motivated priority given to the development of nuclear power in the 1950s and 60s, rather than other alternatives to fossil fuel. Such decisions involve direct reference to extra scientific desiderata and may be subject to the kinds of distortion which Habermas's 'internal colonisation thesis' is designed to illuminate.

In the next section I will take the example of the development of a piece of technology – the Personal Computer (PC) – that has become socially diffuse in the last three decades, and argue that this revised Habermasian framework offers fertile resources for a critical perspective on it.

The case of the personal computer

The emergence of calculating machines in the eighteenth and nineteenth centuries represented a genuine scientific breakthrough. The fact that these machines had no practical use (Babbage's was never used) is consistent with Kunnemann's notion that such developments go on in something of a social vacuum, in which participants are motivated by a common striving to discover the truth. In this case, the struggle was to establish if physical reality could be made faithfully to reproduce the order of logic as applied to abstract problems. It was only with electric power in the twentieth-century that the computing principle began to take on more practical significance. As computer theory developed it began to be experimented with under the controlled conditions of war-time code breaking and, after the Second World War, by governments and corporations for specialist operations.

At this time, the common view was that the world would only ever be able to afford about a dozen computers, which were then very large

and expensive, and required elaborate environmental controls in which to operate. This phase corresponds to Kunnemann's second point of differentiation of technology from science, in that the 'relevance horizon' of those who were trying to achieve something practical with the machines began to determine their design and construction. This was still of limited practical significance, measured in terms of the consequences for society, however. It was only in the 1980s and 90s that small computers, often attached to networks, increasingly came to be used for economic purposes. They came to be associated with the drastic restructuring of business processes that some theorists now call the 'information age'.

Modern corporations use the computer's information processing power to identify patterns and regularities that represent opportunities for more effective business performance. The cheapest suppliers and the richest markets can be identified, worldwide in a matter of moments, using networked PCs to search databases. According to Manuel Castells, this information processing power is central to what is, in effect, a new mode of production.⁷ Governments and organisations are being reorganised to reflect the strategic importance of occupying the right 'nodes' on the international network that defines modern commercial practice (1996, 204).

The new economy is technologically mediated, with the PC as its basic building block. The PC is the basic tool of most capitalist corporations. Only by placing enormous information processing power at the disposal of individual workers has capital been able fully to exploit the possibilities of the computer revolution. Every worker is 'networked' and plays his or her part in the flow of information that makes possible flexible, optimal, 'just-in-time' responses to dynamic global situations. Clearly, the social diffusion of this particular form of computer technology corresponds to the third phase described by Kunnemann – in which technology is directly shaped by exposure to social pressures rather than enclosed in experimental ones.

Indeed, the history of the PC shows that there was nothing inevitable about the design decision to place the information processing power of computers at the disposal of individual human beings. As late as the 1960s, neither chip producers nor computer manufacturers saw any market for small interactive computers that might be marketed to private individuals (Ceruzzi 2000, 223–4; Freiburger and Swaine 1984, 58). Historians and sociologists of the computer agree that the first personal computers were developed for hobbyists and enthusiasts by hobbyists and enthusiasts. The PC was only one manifestation of computing practice and not one that computer manufacturers viewed with any great

enthusiasm. In the 1970s, personal computing seemed unlikely to be anything more than a hobby for a technophilic minority.

The 'hacker' pioneers

Orthodox Marxism tells us that technology is developed in order to enhance productive power and to maintain the interests of the dominant social class. In *Capital*, for instance, Marx writes of technology being developed '...for the sole purpose of supplying capital with weapons against the working class' (1983, 410–11). This is unduly reductive, however. In its exposure of science to social forces, technology can be opened up to a number of competing interests and can become contested terrain. The early history of personal computing highlights this point well: far from seeking to subserve capital, the first hackers invested quite radical hopes in their machines. In Habermas's terms, the PC revolution was initiated by actors and imperatives working not at the level of systematised production but in the medium of symbolic communication aimed at reaching agreement and developing a shared set of aims and rules for their activity. Some such set of shared values seems to have motivated the hackers, rather than imperatives straightforwardly imposed by the economic system. At the same time, their activity was not 'scientific' in the sense discussed above. They were not united only by a search for the truth about the potential for simulating thought in inert matter. The project of developing a personal computer evolved as part of an 'alternative' cultural worldview which was in large part defined by its oppositional relation to the dominant social system in the 1960s and 70s.

For Habermas, progressive rationalisation of the grounds of communication (or the lifeworld) is measured in terms of the extent to which a society encourages its members to assume a 'post-traditional' moral orientation towards each other (1992b, 186). That is, one in which integration and inclusion in the life of the community are made possible much of the time by co-operation and negotiation aimed at securing agreement, rather than through mere rule following. Habermas proposes that we investigate this at three levels – the personal/psychological; the social; and the cultural, each of which, he says, denote societal 'sub-systems' that are key to our on-going capacity for symbolic, as distinct from biological reproduction. The computer pioneers' progressive aspirations and ideological investments in the PC correspond to each of Habermas's levels. They believed that interaction with the computer would enable people to become more autonomous as individuals. They recommended the social diffusion of computers as a way to enhance the development of real communities, based on commonalities of interest

rather than mere co-ordination driven by economic necessity. And they believed that computers could allow more people to have access to more information and that this might provide the material infrastructure for a more democratic culture.

The PC hackers saw computers as extending the powers of the human individual in precisely the direction of a post-traditional moral orientation. Interaction with a computer represented a challenge. One had to work to understand how the machine worked. In so doing, one came to appreciate the power of the machine, to assume its point of view and to respect its limitations. Ultimately, coming to understand the machine offers the human being a sense of personal empowerment or, as Sherry Turkle puts it, 'the computer supports growth and personal development' (1984, 214). Learning to master the complexities of the machine would make people more autonomous in the sense that, although computers were and are fundamentally rule-bound, their complexity required an effort of understanding on the part of their human controllers. It was necessary to project one's self into the machine and take on board its logic and an appraisal of 'where it was at'. Doing so resulted in a greater sense of one's own power, it made one feel more autonomous. Early hackers worked obsessively with their machines, often thinking in arcane programming languages (Levy 1984, 35, 84–5, 220; Turkle 1984, 207; Weizenbaum 1976, 117). The desire to see such a sensibility spread throughout society is clearly resonant with earlier manifestations of the spirit that has driven the progressive rationalisation of modern societies. The model of selfhood being advanced in and through the early PC corresponds exactly to the early Protestant ideal of a 'life guided by constant thought' (Weber 1974, 118),⁸ to Kant's conception of autonomy, and to 'modernist' notions of personal responsibility based on reason and negotiation.

That many of them wanted computers that would realize Ivan Illich's ideal of 'tools of conviviality' is clear just from the names of some of the early computer enthusiast organisations.⁹ The 'Community Memory Project', described by Steven Levy, is a particularly good example (Levy 1984). The project consisted of a prototype PC terminal that was set up in a record shop. People could place information about themselves and their interests onto what became a community database. It was then possible for members of the community to identify and communicate with people who shared their interests and concerns. This prototypical networked PC was intended, by its creators, to serve as a kind of material support for the realization of the progressive ideal of a society based on co-operation and free communication.

The hackers also wanted to use computers to make social relations more transparent. Many of them were explicit in their belief that computers could place people in a position of enhanced control over the direction of development of their societies. These aspirations were sometimes expressed in anti-capitalist terms. The basic idea was that the computers would make information more freely available to more people, leading to more efficient democratic controls. These ideals were reflected in hacker beliefs and disputes about the best design of the machines. These disputes continue to be played out in the social conflicts that shape how PCs are presented to people today. On one hand, the hackers wanted PCs that were technologically transparent – ‘glass boxes’.¹⁰ These challenged their users and offered people the highest degree of real control over the machine (Levy 1984, 238; Pfaffenberger 1988). On the other hand, they saw that it was essential that everyone should have equal access to the information processing power of the computer. Their guiding belief was that if everyone could and did use a computer then the world would be a better place. But this seems to require machines that are ‘easy to use’ and, therefore, not conducive to the development of autonomy, that is, empowerment through the exercise of reason.

This paradox has been played out in a number of conflicts within the PC design community and centres on the character of the machine interface. The 1984 Applemac, designed by a couple of hippy hackers who ‘were going to change the world’ (Wozniak, cited in Himanen 2001, 188), was the first to place a premium on the ‘friendliness’ of the interface. It was a PC that did not demand technical expertise of its human user. This was the first PC to sell widely beyond the hacker community and was quickly imitated by the ‘Windows’ operating system, which was similarly ‘friendly’. However, these innovations were not welcomed by all PC enthusiasts. Interface designers who became prominent in the 1990s all report battles with a hacker-programmer ‘priesthood’ (Negroponte 1995, 90); an ‘epistemological elite’ (Turkle 1996, 54); DOS-snobs (Johnson 1997, 58), or people alleged to consider ‘human factors’ and interface design ‘sissy’ (Laurel 1993, 48).

The prevailing wisdom has been that these disputes reflect the chagrin of a computer elite that was losing its hold on power, but this reflects the fact that the interface designers won the battle to make PCs friendly and than they have written the histories. The force of their retrospective denunciations reflects the fact that there was much more at stake here than aesthetics or taste. The rise of machines that were accessible and friendly in the late 1980s made it possible for key system players to exploit the PC idea and this neutralised the hopes and aspirations of progressive hackers.

The paradox encountered by the hackers who pioneered the PC was played out, and continues to unfold, in the midst of the contradictory demands made upon it first by the economic system, then by various competing levels within contemporary society. Habermas's perspective enables us to grasp the role of the 'friendly' interface in the process of economic restructuring associated with 'informationalism'.

System appropriation of the PC

Marx had already noted that technological expansion under capitalism creates a contradictory situation in which workers are on the one hand increasingly skilled and educated in the operation of the machines, while, on the other, the machines are used to undermine their collective interests (Marx 1983, 457). This situation is threatening to capital, as it means that workers are more likely to understand their own power and to become 'class conscious'. In the information age, this contradiction is intensified and appears as a problem of management. Castells maintains that businesses are obliged to marry two apparently irreconcilable objectives. They need to have flexible workforces which means that employees are kept insecure and their economic vulnerability is used to subordinate them more effectively to the needs of the organisation. At the same time, however, the modern business needs to have workers who are involved in and loyal to the interests of the firm. This is because flexible markets rely on effective use of tacit and overt information. If internal information is withheld for whatever reason this will quickly impact upon company performance. How, then are workers to be kept both subordinate-malleable and involved-communicative? The PC as a near-ubiquitous social presence has been shaped as much by the needs of managers confronted with this problem as by the hippy hackers who first came up with the idea of 'personal computing'.

The systems-level appropriation of computer technology in the last decade has largely been achieved through the design and development of interfaces on computers that contain symbolic meanings that are accessible to any one. The contemporary computer interface is designed in such a way as to be easily inserted into the existing patterns of social and work organisation, not in the sense that computers do not menace established practices and processes – they do – but in the narrower sense of posing no particular challenge to their users. In the parlance of 'human-computer interaction' specialists, PCs are designed to minimise the 'cognitive burdens' associated with computer use. The development of accessible interfaces for computers has seen them redefined as desirable commodities with mass marketing potential. Consequently, PCs

have not only saturated workplaces, they have also penetrated the domestic sphere. The computer as a consumer object has developed largely as a consequence of the 'easy to use' character of contemporary interfaces (Turkle 1996, 60).¹¹

The friendly interface is designed with non-technical people – 'users' – in mind. These systems offer the user an environment in which they can feel that they are 'in control' and that they are 'playing' with the machine, without having to come to grips with its underlying properties as technology. On the basis of these platforms, an entire industry has grown, developing games and other software for people to use in their leisure time. In less than 20 years, the PC has ceased to be the preserve of a technophilic sub-culture and has become something that most people feel that they must have and be able to use. The PC has become an icon of social inclusion and personal success, that also offers its user a 'virtual' world of pleasurable, exciting and distracting experiences. It even offers the sensation of acting in environments that are, in many ways richer and more diverse than anything on offer in real life. The intensity of the experiences associated with the virtual worlds generated by the PC has led many to question whether simulated experience may not be as valid – as worthwhile and meaningful – as so-called 'real ones'. Such questioning has large implications for personal identity, social life and culture¹² – in short, for the direction of social evolution in its lifeworld dimension. Ironically, as it has come to be a richer source of meaning for human beings and a more salient feature of our lifeworld contexts, the PC has also come to constitute a new steering medium in the systems sphere.

Computer programs of enormous complexity have been developed to generate recommended courses of action for firms and their employees based on precise measurements of their past performance. These programs then determine the actions of humans in the systems sphere. Transaction processing systems, for instance, record sales of commodities and identify patterns in purchasing behaviour. This information can be analysed and presented to managers to help them determine which stock lines should be expanded, which discontinued and so on. The discretionary power of individuals is increasingly overridden by the superior information processing power of the computer. This superiority gives a special authority to the computer's assessment of the situation and to its recommendations. In this process, human beings are relieved of the burden of communicating about aspects of a given problem situation, in a process Habermas calls 'mediatisation'. Computer technology applies principles of relevance to data and selects out the most important results which it then represents as facts, or information,

which is then decisive for future developments. The obvious rightness that attaches to computer generated prescriptions for business is linked to the reification of the machine's representations. Here, computer technology is being used to represent information in a way that is bound to be decisive for future developments. The role of communication and debate in setting priorities and deciding what to do next are narrowed as the criteria for representing what is important have been selected in advance. Confronted with such an overwhelming representation of what counts, it no longer makes any sense to question the relative priorities attaching to the different kinds of information possessed by the organisation. Information that is not processed as physical data is excluded from consideration. The dominant interests within the corporation – normally its accountants – have deployed the power of the computer as processor and as representative medium of information. Processes are, then, streamlined and improvements to business performance speeded up by the mediatizing presence of computer technology.

At more mundane levels of the systems sphere, the mediatizing power of reified computer representations also contributes to process automation. Once an activity involving many people pursuing co-ordinated actions has been rigorously described its elements can be codified and reproduced by the computer. The insertion of programs that tell people what to do and when, while at the same time enabling them to do it with a mouse-click or a button press, can then expedite repetition of the most successful and efficient forms of the original activity. This has been described by a number of studies of computerisation in the work place (Kumar 1995; Murphy *et al.* 1986; Perelman 1998). The system asserts its logic – the priority of making sales – at the interface, with its incessant demand for the next barcoded item. The taking of money from the customer has been defined as the core activity of the shopworker and a program has been written which reflects this and prioritises it. Habermas calls this prying loose of an activity from the communicative, fluid and open-ended context in which it first evolved, technicisation:

Actions and communication processes are 'technicised' when they can be repeated as desired, according to a rule or algorithm, and can be rendered automatic, that is, freed from the burden of explicitly taking up and formulating the requisite intuitive knowledge. (TCA1, 430–1, fn 23)¹³

Computers with 'user friendly' interfaces clearly contribute to the technicisation of processes that used to be more diverse in character and

grounded more in communicative practices. In this sense, they contribute to the steering capacity of contemporary social systems.

PCs as we are experiencing them now are opaque with regard to their underlying technical contents but, as we have seen, many of its pioneers wanted transparent ones. While its use by the system has seen the computer become socially diffuse, the 'easy to use', 'friendly' interface is completely inconsistent with the design principles of the computer pioneers. It is deeply ironic that the PC, conceived as a tool for human emancipation and as the material basis for a more liberated form of social life has been used as a tool to enhance the command and control aspects of improved system performance. This irony is intensified by the fact that the systems role of the PC grows in direct proportion as the capacity of the interface to simulate meaningful contexts of engagement and interaction develops. The more the computer seems to offer its user a lifeworld, the more effectively the system 'reaches right through'¹⁴ the illusions at the interface to exercise control.

Habermas, informationalism and social evolution

The early hackers who pioneered the development of the PC invested ideals and principles in a certain form of the technology, namely, the technologically transparent machine. The significance of the emphasis placed by the early hackers on 'challenging' machines comes into view when we follow Habermas and focus on improvements in learning as the motor of social evolution. The PC was transformed, however, as it was exposed in the course of its development to a wider range of social forces. In particular, key players working at the systems level of society demanded machines that looked and felt 'easy to use' and which would conceal their character as computers from their human users. Habermas argues that if we are to understand the kinds of reversal discussed here it may be useful to move beyond a merely empirical stance on events and to pose the question of counterfactual lines of development (Habermas 1990, 192).

Habermas, hackers and opposition in the information age

There is little doubt that the transparent PCs recommended by hackers would not have resulted in the information age. If PCs had remained difficult to use, challenging of their users, then the likelihood is that they would have remained a minority pursuit. Business uses of the technology would have been confined to specific sectors, presumably those where workers already had some engineering skills. The friendly interface

made it possible to insert information processing technology into a wide variety of social locations where it subsequently improved efficiency and changed the basis upon which business performance tends to be measured. Forces at the systems level of society must be credited with having selectively appropriated the idea of personal computing and with having developed it in a certain direction. If we interpret the history of computing in this way, then the worldview of the early hackers appears as having been subject to a historic disenchantment analogous to that experienced by Protestantism in the development of capitalist society in the seventeenth and eighteenth centuries.

From the standpoint of the 'informational society' theory, however, this tension does not stand out as particularly significant. This is most clear from recent work on the subject of hackers by one of Castells's followers, Pekka Himanen. The figure of the hacker is important to Himanen, but for very different reasons to those identified above. In his, *The Hacker Ethic and the Spirit of The Information Age* (2001), Himanen makes 'playful' (142) use of the title of Weber's classic study of the social and ideological origins of capitalism. However, he does not engage with, or make productive use of Weber's thesis as an argument about history and the role of ideas and idealists in social change. Instead, he conflates Weber's discussion of the 'Protestant ethic' of seventeenth-century Europe with contemporary, pejorative uses of that phrase. Himanen simplistically associates the Protestant ethic with a driven attitude to work and a kind of system-conformist personality type. His idea is to oppose the beliefs and values of computer hackers – the 'hacker ethic' – to this. Hence, he writes that, 'The original meanings of the terms *capitalist* and *hacker* pull in different directions' (2001, 36). Dramatically missing the point at which the analogy with Weber's Protestants might be most fruitful, Himanen eulogises contemporary hackers and imputes to them an oppositional significance in the present which is essentially illusory, even ideological.

There is, however, an important sense in which the activity of hacking, rather than hackers, is profoundly significant. The PC continues to be a site of struggle. Who controls any given PC, what is done with it and how are issues that are not resolved by the design of its interface alone. People refuse to 'not learn' intelligent computing practice, despite the interfaces. Moreover, while this practice is more risky to capital it also holds out the advantage of efficiency gains and so is unlikely ever to be suppressed altogether.¹⁵ The information age is not an era of universal emancipation achieved through the spread of knowledge-based work and the emergence of a new, enlightened citizenry, as foreseen by Castells. His

optimistic view overlooks the tortuous path down which the PC has actually travelled and the various ironies of social history that attend its development. Habermas's perspective, especially his differentiated concept of social evolution, offers resources for a more balanced analysis of the development of the PC and of the 'information society'. This analysis shows that the character of the interface and the level of expertise possessed by its operatives is an area of contestation. This is resulting in a diffusion of programs and artefacts, with firms investing in 'in-house' developments when the functions carried out by programs are particularly important to them, for example.¹⁶ This proliferation of artefacts and diversification of interfaces reflects competing pressures and represents an opportunity for workers who will have to operate them. Of course, transparent interfaces will not be relevant to every working locale, but the issues of education, control and responsibility are. Castells and other advocates of the 'information society' present a vision that in some ways converges with the one being broached here, but which is largely bereft of its critical purchase.

Criticizing technology: Marxist critics of Habermas

The struggles referred to above are not susceptible to reduction, as in orthodox Marxism, to economic class interest. Rather, PC technology traverses the system–lifeworld dimensions and is altered and manipulated in various directions at once, by forces located at various points within both domains of social evolution. Marxist critics of Habermas argue that, in his assertion that steering media serve to stabilise capitalist development and offset its crisis tendencies, Habermas merely reworks a 'revisionist myth' (Harvey and Read 1991, 350). However, the example of the PC illustrates that such media can work precisely to enhance systems level control over social action. The problem is to identify those circumstances under which this mediatisation is regrettable. For Habermas, not all such instances are objectionable, even from a socialist standpoint. Mediatisation would only be a bad thing if it could be related to pathological, or crisis tendencies, at one of the three levels mentioned above (personal identity formation; social solidarity; cultural meaning production). There are, of course, research programmes under way exploring just this possibility in connection with PCs and related technology. It would appear that his Marxist critics regret not his failure to identify crisis tendencies as such, but his neglect of their own particular bugbear – the economic sphere.

Harvey and Read correctly point out that, for Habermas, emancipatory agency no longer resides in the productive sphere alone. The case

discussed here gives us some good reasons why this should be so, highlighting in particular the fact that the locus of social antagonism and of the decisions that determine the distribution of social power may traverse the system–lifeworld boundary. Because Habermas does not concentrate on the working class as the privileged agency of emancipatory strategy and politics, Harvey and Read accuse him of formulating a ‘scaled down’ program of human liberation (1991, 358). However, the example presented here suggests that his position might open out onto an extended critique of a number of diverse and novel social contexts, within which the key questions of the legitimacy of different modes of integration and action co-ordination arise. The case of the PC indicates a proliferation of such modes and of social settings in which they might be implemented, many of which will not involve class relations as such.

His Marxist critics also object, however, to Habermas’s overall functionalism, which, as we have seen, holds the various elements of his evolutionary model together in the final instance. Referring to alternative models of evolution, Harvey and Read maintain that Habermas’s model is insufficiently open and diverse in its account of change and the potential for change. If only those elements of worldviews are selected which stabilise the system and facilitate its further expansion, they argue, then his theory is essentially conservative. However, as Esteban points out, for Habermas, ‘... communicative action can serve as the model for a non-selective pattern of rationalisation’ (Esteban 1991, 111). The example of the hacker pioneers of the PC illustrates that experimentation and diversity are the very stuff of the lifeworld and that the course of social evolution, including progressive rationalisation, need not run smoothly. As Michael Schmidt points out (Thompson and Held 1982), Habermas does have a tendency to write as if there was a teleological development of reason at work in the lifeworld and to deploy the art of ‘rational reconstruction’ criteriologically – to distinguish the historically significant. This strategy has been employed here, however, and no pretence made at stating the criteriological basis for critique, the resources for which come from elsewhere in Habermas’s system.¹⁷ Habermas’s purpose in developing this model was, as seen above, to set the problematic for social enquiry. Sociology has an interest in those cases where the pattern of improvement through learning seems set to break down, when learning processes are failing, cultural transmission of ideas is threatened, or some people seem to be denied access to the benefits of social development.

How, then, are we to assess the impact of the PC from the perspective of a critical theory of society? Thomas Hughes distinguishes radical

from conservative technological innovations in the following way:

Inventions can be conservative or radical. Those occurring during the inventive phase are radical because they inaugurate a new system; conservative inventions predominate during the phase of competition and system growth, for they improve or expand existing systems. (Bijker *et al.* 1989, 57)

Certainly, the PC was radical technology in the sense that it has driven dramatic change in the global economy. However, in the course of its assimilation into capitalist economic relations it has come to play a more conservative role, consolidating and stabilising the new set of social relations. The problem with Hughes's theorisation is that it defines radicalism and conservatism relative to the development of the economic system. The PC, however, has never sat comfortably within the systems sphere. Personal computing was an idea born in the cultural lifeworld and pioneered as an agent in 'progressive rationalisation'. As has been shown here, it was fundamentally the creation of a culturally specific group of people who looked to it as a source of symbolic meaning, rather than as a tool with which to perform tasks more efficiently. The extent to which the PC is radical or conservative, then, turns not merely on whether and how it is transforming the economic system but also on the nature of its impact on the symbolic lifeworld.

Conclusion

Critical social theory has the resources with which to develop a politics of the interface in which a complex set of factors are in play, shaping the technology, which in turn acts back upon social relations. This complexity is best understood in terms of the competing demands of societal rationalisation and systems-level forces, as theorised by Habermas. It no longer makes sense to reduce the critical analysis of technology and technical progress to the economic sphere and to explanations citing class antagonisms. Social life has been saturated with technology and competence in handling technical artefacts is something that enters art and leisure as part of the symbolic order of our cultural life. The consequence has not been a straightforward subordination of the lifeworld to systems side imperatives and a dramatic extension of the logic of domination; we might just as well speak of an injection of meaning and value into the technical as of a digital recodification of our social mores.

Habermas offers a model of social evolution that preserves and reinvigorates many of the key critical intentions of Marx. It enables us to avoid Marxian reductionism, however, and to view technology in terms of its broader cultural significance. While it offers resources for practical critique of the diffusion of technological artefacts, Habermas's model also enables us to avoid the bland generalisations of the 'information society' thesis and to see the dangers as well as the possibilities associated with technical progress. This is as it should be in a theory that aims to defend the Enlightenment ideal of progress towards a better world, secured through the exercise of reason.

Notes

1. I would like to thank Paul Blackledge, Alan Carling and Gordon Finlayson for numerous discussions that have helped in the writing of this chapter.
2. This aspect of Habermas's project is discussed at greater length by Styrdom (1992).
3. The selective retention of elements of the Protestant worldview is discussed repeatedly by Habermas in *The Theory of Communicative Action* (1990, 180, 200–1, 221; 1992b, 314–15). Other references to the process of 'selection' occur in (1979a, Sect. IV; 1979b, 13; 1984, 172). For an excellent critical discussion of the issue, see Esteban (1991).
4. In a sense, Habermas proposes to exploit the ambiguities of evolutionary theory, ambiguities that were neatly summed up by Bury in 1920: 'Evolution itself, it must be remembered, does not necessarily mean, applied to society, the movement of man to a desirable goal. It is a neutral, scientific conception, compatible either with optimism or with pessimism. According to different estimates it may appear to be a cruel sentence or a guarantee of steady amelioration. And it has actually been interpreted in both ways' (Bury 1920, 335–6). See also the essay by Bock in Bottomore and Nesbit (1978) for a classic discussion of the relationship between Enlightenment ideas of progress and evolutionary theory in sociology. Callinicos (1995) contains a fascinating discussion of contemporary thought on the matter.
5. Habermas's benign and basically instrumental attitude towards science and technology may reflect the influence on his thought of American pragmatism. G.H. Mead, for instance, describes social evolution in terms of differentiation, and argues that science 'enlarges the human environment' (1967 [1934], 217), while John Dewey views technology essentially as extending our natural experience of the world (1997 [1925], 103).
6. We should note that appended to Kunneman's article are some comments by Habermas in which he endorses the former's modifications.
7. Castells famously prevaricates on this issue (1996, 95), although his intellectual ally, Michael Carnoy is, I think, more explicit (1995, 5).
8. The analogy between the early hacker culture and the Protestant ethos is explored in my 'The Hacker Ethic and the Spirit of Informationalism', in *Max Weber Studies* No. 3, forthcoming.

9. Illich (1979) envisaged local computer networks as part of an alternative social infrastructure to the (oppressive) school system.
10. Hence, Levy reports (1984, 175) that some hackers considered the BASIC programming language 'fascist' because it concealed the inner workings of the machine from the user.
11. The value of the domestic market in PCs grew steadily throughout the 1990s, peaking at around \$6 billion a year. Forty per cent of this market is in the US, most of the rest in Europe (BBC *News On-Line* 2001). In recent times sales have fallen dramatically, though it is too soon to say if this decline in demand is caused by or is largely coincidental with the global recession.
12. Sherry Turkle says that the computer is an actor in the struggle between modern and postmodern understandings (1996, 43).
13. Habermas's definition of 'technicising' systems was formulated to cover the role of 'communications media' generally, but applies particularly well to the role of computers in the systems sphere.
14. Habermas uses this striking formulation more than once to describe how systems-level imperatives may assert themselves in lifeworld contexts (1992b, 117, 150).
15. Work with 'command line interfaces', using programs that require mastery of a specific syntax rather than a graphical user interface is more efficient in terms of time taken to complete tasks and economic use of machine resources.
16. Raymond (1999) provides anecdotal evidence that such applications are much more common than is generally recognized.
17. The reader will note that we have not inferred anything about the rightness or wrongness of the hacker pioneers' worldview, only observed that it was there and that issues of the distribution of power through technological design are brought out in it.

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8

The Possible Wonders of Technology. Beyond Habermas towards Marcuse: a Critical Framework for Technological Progress

Giuseppe Tassone

Introduction

If Heidegger is right in his reading of Western civilisation, we live in an epoch dominated by technology. This claim is not innocuous. It does not merely say that technology is an aspect, even the prevailing one, of the contemporary world. Rather, it implies that in the technological phenomenon an entire history, namely, the history of metaphysics and of the forgetfulness of Being, comes to its logical conclusion. In other terms, it says that in the technological world of late modernity culminates a historical totality and, as a result, the whole culture is penetrated by technical modes of thought.

There are two lines of argument running against this Heideggerean substantive conception of the universality of technology: one asserts that technology is neutral and that machines are mere tools that we can use for different purposes; the other recognizes instead the fundamental bias of technology towards domination of man and nature, but asserts also that it is possible to transcend its repressive clutches into a higher, humanised technological universe.

The first line of argument is held, among others, by Habermas who believes that there is nothing wrong with technology as such. According to him, the problem with technological modernisation resides in the spread of instrumental and purposive rationality – a category into which he lumps technical practices – to all spheres of life. He warns that, as long as the imperatives of technical reason encroach upon the lifeworld, they tend to delegitimise genuine practical or political questions and

take over the specific forms of rationality regulating our everyday communicative practices.

The second line of argument is held by Marcuse. He directs his critical attack not just against technology, but against scientific and technical reason. He claims that machines are in their very structure penetrated by the dominant values of industrial society. This bias, in his view, is not a contingent accident of a repressive application of fundamentally neutral raw materials, but is inscribed in the nature of formal thinking. The consequences of this thesis are devastating. On the one hand, it implies the assertion that the world has become one-dimensional and that there is no place for critical consciousness. On the other hand, it suggests that, insofar as there is room for critique, the present technological reality can be transcended only by abandoning science.

In this study, I confront the implications of these two lines of argument. In the second section, I begin with a presentation of Habermas's theory of modernity as the emergence of the conflicting spheres of instrumental and communicative rationality. Then, in the third section, I apply his theory to the issue of technological progress. Drawing on a book by Simpson (1995) which devises a theory of technology within a quasi-Habermasian framework, I argue that, as long as this framework confines technology to the domain of instrumental and purposive rationality, it is untenable.

My thesis is that technology is value-laden. In advanced industrial society it is biased towards domination, but in a free society it can be bent to serve different, alternative purposes. In order to support my claim in favour of the liberating and emancipatory potential of technology, I rely in the fourth section upon Marcuse's analysis of technological rationality. Drawing upon Feenberg's interpretation of Marcuse, I argue that his dialectical conception of reality offers a viable framework within which to conceive a new technological society based upon the values of freedom, justice, equality, happiness and beauty. The accomplishment of this utopian project does not require us to relinquish science and reason. The story of the transformation of technology is different from the story of the transformation of science, and the distinction between these two domains can and must be maintained.

Communicative reason versus instrumental reason: Habermas's theory of progress

Habermas offers a critical paradigm of understanding social meaning which combines hermeneutic interpretation with the empiric-analytical

procedures of the natural sciences. He traces both of these modes of research back to a reflective power of human rationality to produce uncoerced consensus in a process of domination-free discussion. According to Habermas, the human species is oriented in the course of its evolution towards the acquisition of a reflective capacity to overcome disagreement through a process of intersubjective dialogue. The legacy of the Enlightenment is not exhausted by the affirmation of instrumental and purposive rationality but includes also a dimension of communicative rationality in which issues of practical life are intersubjectively debated. In the modern world dominated by technological progress and maximisation of efficiency, however, questions concerning the nature of the good life are increasingly taken away from the context of communicative disputation and brought under the management of an apparatus of experts where they become *technical* questions concerning the most efficient means for the achievement of an end. The challenge facing the legacy of the Enlightenment consists, for Habermas, in finding ways to preserve a space for intersubjective dialogue against the encroachment of instrumental imperatives.

To be sure, Habermas is not opposed to conceptualising certain aspects of society in system-theoretic terms – that is, in terms of a whole articulated into a plurality of elements whose functional relations guarantee the stability of the whole – but maintains that the intersubjective dimension of the lifeworld cannot be totally objectified into an alienated system. In fact, were the process of system integration to succeed in absorbing the realm of intersubjective communication, the latter would be reduced to a structure of practices operating as self-regulating mechanisms independent from any subjective determination. Accordingly, insofar as the primary level of the lifeworld is preserved as a source of meaning from the assault of the system, it provides a model of rationality alternative to the dominant instrumental one. Habermas rejects the historical materialist model of species history which assumes the existence of a macro subject – that is, the species subject – undergoing evolution and instead identifies societies as the bearers of evolution. He points out that social evolution occurs in world history as a process of replacing certain social structures by more comprehensive ones ‘in accord with a pattern that is to be rationally reconstructed’ (Jay 1984, 488; see also Habermas 1979, 140). This denial of a macro subject in history, though, does not prevent him from extending to the phylogenetic level of the species the process of individual cognitive maturation occurring at the ontogenetic level. Rather, Habermas argues that the species as such learns at both the instrumental and moral level and that

the historical process in which this formative advance takes place follows a developmental logic.

This logic of instrumental and moral development does not unfold along the unilinear trajectory of a necessary pattern. Habermas denies the possibility for historical knowledge to anticipate the totality of future events. History, he claims, is a narrative reconstruction of events that occurred in the past and does not lend itself to prognostic speculation. Its task is limited to explaining factual processes as actualisations of structurally open possibilities. These possibilities, in turn, may be progressive or regressive. There is no guarantee that the species will follow the progressive pattern of action. Yet, once a certain path is taken at a given stage of the evolutionary process, the structural sequences arising from that course are irreversible. In a challenge to the nihilism of Max Weber, Habermas argues that modernity is an uncompleted project whose prospects of fulfilment are still open. In his view, modernisation is more than the process of increasing expansion of instrumental rationality. He contends that an emancipatory progression can be discerned in the development of the modern world which proceeds from 'the ritual practices of sacred cults to the symmetrical social interaction' of communicative rationality (Jay 1984, 503). The worldviews of the earliest communities were based upon a form of 'totalistic mythic thinking' (Jay 1984, 505), whose normative foundations eluded reflective legitimation. As universal consensus on the ethical standards was guaranteed by the authority of a unified collective consciousness, social practices remained unexamined. However, the disenchantment of this sacredly grounded moral and cognitive order has unleashed a kaleidoscope of alternative worldviews for whose decision-making processes rational procedures of communicative interaction are required. Consequently, as the attainment of normative agreement becomes increasingly necessary, practices of communicative rationality widen so as to enact a collective learning process to which the species submits itself.

This evolution from pre-rational religious worldviews to the differentiation of the sphere of the communicatively mediated lifeworld is, for Habermas, a legitimate achievement of modernity. If it is true that, from within this type of rationality oriented towards normative agreement a more instrumental rationality has developed which threatens to colonise the lifeworld itself, Habermas underlines the capacity of resistance of the rationalised lifeworld against its systemic integration. The struggle over which type of rationality should prevail is not yet over and Habermas undertakes the task of rescuing 'the critical potential for completing the project of modernization' (Jay 1984, 507). Indeed, he does

not envisage a sweeping triumph of communicative upon instrumental rationality, but argues for a mediated relation between them. Although he is aware that their antagonism will never be overcome into a 'harmonious normative totality' (Jay 1984, 506), he believes that functional procedures of rationalisation can be effectively used to increase the emancipatory potential of the discursive dimension of the lifeworld.

The lifeworld is the domain of values and norms. If consensus upon them breaks down, it provides from within itself discursive procedures to reestablish agreement. The argumentative renegotiation of the norms and values upon which new modes of social organisation are forged occurs through a process of reinterpretation of needs and interests. These, for Habermas, are not givens, something imprinted upon human nature from the very beginning and therefore immutable. Rather, they can be discussed in a process of dialogic exchange so as to be redeemed from the sheer particularity of their original shape and become generalisable. Habermas's notion of rationalisation of the lifeworld as opposed to systemic rationalisation refers precisely to the differentiation of practices of consensus oriented communication within the dimension of social life. Technical solutions to problems arising in this sphere short-circuit the very practical character of those problems. When the abstract mechanisms of functional rationality creep into the lifeworld, the processes of mutual understanding and co-ordination of action orientations whereby consensus is generated are bypassed, thus enabling an elite of 'functionaries and experts trained to obey' (Benhabib 1986, 229), to take the place of social actors. They are imposed from outside and do not take into account the developmental nature of human life in the domain of *praxis*. From their systemic perspective, functional orientations elude the interpretive process through which social practices unfold and progressively neutralize the sources of meaning originating from the lifeworld. The result is nihilistic degeneration or postmodern decline whose regressive tendencies Habermas's theory of communicative action seeks to counteract.

A quasi-Habermasean model for technological progress: Simpson's longing for a meaningful life

There is a dominant notion of progress today which is consistent with technological rationality, that is, with a view which conceives of reason in instrumental terms as a system of procedures to achieve an end by using the most efficient means. In this view, progress is identified with technological progress and, therefore, as long as technology is seen as end-oriented, with the extension of the structures of purposive-rational

action to all domains of life. Under the sway of the technological imperatives of efficiency, planning and control, human actions no longer proceed in accordance with norms and values communicatively agreed, but become driven by ends functionally chosen via strategic procedures of rational adjudication.

By using Habermas's conceptual distinction between the lifeworld and the subsystems of purposive-rational action and by combining it with hermeneutic insights into the contexts of meaning, Lorenzo Simpson sets out to conduct a critique of technological rationality. He argues that there is an elective affinity between technological rationality and nihilism, and offers a critical framework to provide ethical norms generated from experience and practices from whose viewpoint it becomes possible to criticize technology. In drawing upon Simpson's book, my intent in this section is to test Habermas's theory of communicative rationality on the issue of technological progress and demonstrate the inadequacy of his theory to account for it.

Although the question whether technology is an autonomous phenomenon with a logic of its own or is dependent upon the social, economic, and political circumstances in which it is inserted is still open, there are some essential features of technology which can be analysed as such regardless of the changing socio-economic settings. Moving from the analogy between the fast supplied microwaved dinner and the family dinner whose preparation requires 'time, care and commitment', Simpson captures the fundamental aspect of technology in the 'ability to shrink space and time ... , that is the ability to decrease by degrees the "distance" separating the desiring subject and the object of desire, and to do so without in any significant way altering the subject or the object' (Simpson 1995, 3).

Simpson holds that technology, by giving priority to the imperatives of domesticating time and manipulating the future, tends to distort the meaning of our actions. To support this claim, he distinguishes two kinds of attitude towards life and the world: (1) the nihilistic or value-perspective attitude, which takes values to be mere objects of subjective deliberation; and (2) the hermeneutic-phenomenological perspective, which recognizes the communicative dimension of the lifeworld to be the main source of human action. Now, Simpson claims that technological rationality is consonant with the value-perspective and, ultimately, with nihilism and postmodernism. In his conception, the technological worldview, with its emphasis on the most efficient ways of securing an end, generates a perspective from which values are disengaged from relations of meaning with the world and made mere products of the will.

This perspective, because of its fundamental incompatibility with contexts of meaning of the lifeworld such as 'communication, friendship, love, parenting, and so on' (1995, 5), effects a conflicting dynamic which is at the roots of the clashes between the inner logic of technology to colonise the lifeworld and the mechanisms of resistance that the latter enacts to protect itself. Accordingly, the challenge facing Simpson's project is the following: is it possible to envisage structures of control of technological progress so as to make it compatible with the sources of meaning of the lifeworld? In other terms, are there binding universal ethical criteria which could enable us to resolve the dispute between the claims of the lifeworld and those of technology? According to Simpson, there are, and he articulates them in the formula 'the idea of humanity as a negotiated, unfinished project', an idea which in his scheme plays the role of an outside, critical measure from whose standpoint the technological understanding of the world is counterbalanced.

As claimed above, technology is, for Simpson, end-oriented. The kind of rationality underlying its logic of development is the instrumental-purposive one. The technological worldview separates means from ends. Under its dominion, means are rationalised and submitted to procedures of calculation for selecting the most efficient ways for the procurement of an end. Driven by the imperative of maximising effectiveness and efficiency in the pursuit of a given end, technological progress generates a set of practices whose aim is to make the future predictable. As a result of this commitment to rational calculation and quantitative measuring, technology is, according to Simpson, worldless. Its viewpoint is such that 'worldly things are reduced to means' (1995, 22), that is, in Heidegger's vocabulary, to raw materials or standing reserve ready for consumption and exploitation. Since the technological world picture does not recognize the contexts of meaning of the lifeworld as a source of legitimation of our practices and actions, it cuts off the ends and values it pursues from the significant dimension of those non-technological forms of life that might place a constraint upon their realization. Technology brackets the world as the horizon of meaning of human practices. It abstracts from space and time as the meaningful location of our activities and creates a disembodied space and time whose measures become commensurable only within a formalised system of co-ordinates.

What, then, are the structures of meaning and contexts of significance whose maintenance and enforcement make our lives more valuable? Following Heidegger and Gadamer, Simpson argues that we exist as beings in the world, that is, we are always already involved in the world.

Through language, we are engaged in the world in such a way that we are able to deal with things that we encounter in it and relate them to our needs and interpretations. The world, he states, is given to us as an articulated totality of meanings which, in turn, exist pre-reflectively, behind our backs (1995, 31), and shape the way in which we understand ourselves according to a coherent pattern in a historical continuum. Therefore, since we are always already situated in a taken-for-granted totality with its pre-reflective orientations, the process of self-understanding and self-enlightenment takes place by putting at risk the culturally induced and historically derived meanings embedded in the world.

In this perspective, the course of experience develops in a negative form. Experience is constantly thrown back upon itself to question and thematise what it has already acquired. Meanings, concerns, orientations and commitments are called upon to be scrutinised and evaluated. If their implicit claim to adequacy turns out to be an illegitimate projection onto universality of certain aspects of a contextually bounded form of life, they are put into question and possibly denied. It is precisely in the contradictory movement between the claim to validity of our assumptions and presuppositions and their inescapable perspectival boundedness that experience proceeds and men come to gain self-knowledge and expand their own self-understanding (1995, 32).

To further highlight the way in which the process of experience develops in the sphere of the lifeworld, Simpson brings into play the case of scientific experience. Like the technological worldview, it appears that the point of view of science is worldless too. Evoking the Heideggerean conceptual framework, Simpson claims that in science the world is transformed into a picture. What is originally a common background of pre-understanding that gives meaning to our practices becomes, under the scientific scrutiny, a representation held by a distant and detached subject. As the subject stands over against his own representations, he 'loses his place' in the world in the same way as the world 'loses its claim' on him (1995, 31).

The experience of science begins by bracketing and neutralising the pre-reflective meanings. All interests, value-orientations and perspectives are suspended during its practice in order to achieve a condition of impersonal objectivity. The scientist, reduced to the status of a displaced historical consciousness, becomes a spectator of the world. From his detached situation, he can never achieve self-understanding or self-knowledge, for the latter requires us to put our pre-conceptions and pre-judgements at risk. But these worldly assumptions are suspended in science. Science 'freezes' meanings, 'making them rigid and atemporal' (1995, 36).

From this description of the ontological status of science, it follows that a scientific self-understanding cannot enable us 'to generate an account of the meaning of our experience' (1995, 40). Yet, Simpson wants to preserve for man the possibility of taking possession of who he is and in his project this is to be done in a critical way. Thus, he suggests that moral inquiry should rely upon a general principle designed to operate as a regulative ideal of the good life, that is as a methodological device containing the property to distinguish and select between different conceptions of the good.

Science and technology decontextualise means and ends from the background of assumptions and beliefs that constitute the world. Within the civilisation they inform, meanings are transformed into values. They are detached from the context of the lifeworld in which they are originally embedded and rendered objects of functional evaluation. They become, therefore, objects for a subject so that, before the latter's arbitrary play of preferences, only the principle of utility comes to hold as a selective criterion.

But means, separated from their ends, have no meaning. They acquire a meaning as long as they effectively contribute to the achievement of an end for the sake of which they have been chosen. Constrained by the logic of utility, the very doing of the action performed to serve a given end becomes irrelevant. On the other hand, however, the ends are not significant in themselves. They contain no inherent value. In the technological worldview, the meaning of an action is granted insofar as it is transformed into a goal for which an account can be given in operational terms. Ends are, therefore, assessed through quantitative measuring. Once achieved, they can easily become means for further ends. In this light, for example, it is not surprising for Simpson that the cultural practice of the family meal – something, he claims, understood to be significant in itself – is increasingly being replaced by the fast-food meal as long as the latter guarantees the operational end of fulfilling the nutritive function of our organism. 'Why bother', he asks, 'to take the time to sit down together face to face at all in, say, McDonald's?' Why not exploit the convenience of the 'drive through', or of microwaved food consumed at different times by the various members of a family? (1995, 45)

If understood correctly, meanings do not fit in the spectatorial conception of values. They cannot be distanced from the acting subject, for they exist only as long as they can make a claim on him. Meanings give significance to practices by orienting them in the space of possible alternatives within the world. Now, Simpson argues that the technological civilisation reduces the meaningful potential of human experience because,

through its means–ends rationality, it disconnects the link between the processes and actions through which experience unfolds and the historical and cultural contexts by which they are shaped. Technology does not see the world as a totality of inherently significant practices whose meanings provide maps of orientation for the acting individuals. It abstracts from the plurality of relations that things and events have with the ‘world’ as a whole and, by doing so, it remains worldless.

Also in the dimension of temporality, Simpson captures a fundamental ambivalence in the way in which technology deals with time. He argues that, whereas, on the one hand, technology ‘through its incorporation of the idea of progress’ rests upon a linear conception of time in which the future is experienced as open, on the other hand, by virtue of its imperative to domesticate time and make the future predictable, it closes off the openness of the future and annihilates the linear experience of time (1995, 54–5).

Against the technological ideal to put an end on history by closing off the future as an open horizon of real possibilities, Simpson vindicates an hermeneutic understanding of *praxis* based upon the temporality of repetition. He maintains that human practices imply an attitude towards time in which the horizon of the past and the horizon of the future are merged together. In the sphere of *praxis*, actions are oriented towards the future by way of a recollection of the past. As they are performed, they activate or repeat already existing possibilities handed down from the historical past. This does not mean, however, that the actions are always the same. They are, rather, new enactments of meaningful tokens deposited in the tradition. Tradition renovates itself through ‘novel appropriations’ and ‘creative continuations’ of what has already been and sets the frame of meaning in which past realizations are brought forward and given a new shape.

Thus understood, the temporality of repetition, rather than closing off the future, keeps it open. Since it does not aim at rendering the future predictable and manipulable, the novelty that is potentially stored in the projections of our pre-reflective orientations is not threatened to be pre-empted. Of course, the movement of repetition does not admit radical breaks in the historical process. In this respect, it privileges more the transmission of tradition than the advance of progress. Yet, tradition is not merely concerned with the preservation of the past. The emphasis of repetition is rather on the meaningful production of actions in which the vicissitudinous character of temporal existence is enforced more than denied. And this can be done only through a mediation with the past.

Simpson's critique of technological rationality is based upon the idea that the temporality of making implicit in technology – that is, the priority given by technology to the end of the action at the expense of the shape that the action assumes through the time in which it is performed – poses a threat to our ability to construct our lives in a meaningful way. Technology affects our self-understanding. Life, according to Simpson, has instead a narrative character. It lends itself to being arranged as a story wherein all actions and events are held together in a unity along a common thread. The problem with technology is precisely that it impedes the articulation of life within a coherent pattern. The aims that actions performed under its rule pursue are utterly disconnected. The temporality of repetition allows instead the scattered and dispersed moments of the intermittent technological existence to be gathered into a meaningful order and be told as a story.

At this point, however, Simpson's project faces an aporetic dilemma: how can in fact repetition be employed as a standard of critique, that is, as a standard of the critique of technological rationality, if our lives are already a repetition? (cf. Simpson 1995, 71) In other terms, how can repetition play the role of a normative ground for critique if the movement of life it enacts does not come to an end? Simpson sees the way out of this dilemma in an understanding of the temporality of repetition as a dialectic between the individual and the historical context in which he is inserted. Suspended in a tension with the whole, he claims, the individual takes up from tradition culturally sedimented meanings and reactivates them in a distinctive way. Of course, the novel achievements of the individual do not bring the dialectical tension to a rest. Nevertheless, this does not imply for Simpson that there cannot be closure of the story of our life. After all, closure is necessary as long as it is the ending that provides the story with a meaning, unity and coherence.

However, the point here is that, within the hermeneutic of repetition, the closure is constantly deferred. As a consequence, the standpoint of repetition from which the critique is conducted in Simpson's attempt remains ungrounded. It needs to be supported by a further criterion which he articulates in the formula 'the idea of humanity as a negotiated, unfinished project'. But, in introducing this formula, Simpson's critique takes a turn away from Habermas's theory. He rejects all universalistic and transcendental claims implicit in Habermas's notion of learning processes. The idea of humanity as an unfinished project results for him from a process of historical negotiation. At each stage of history, Simpson states, an indefinite space of human possibilities is disclosed. The choice of which possibilities to actualise is made according

to a certain standard of 'the good life' agreed in the course of a rationally grounded debate (Simpson 1995, 122). The consensus achieved is however provisional and constantly subjected to revision. Habermas's theory instead implies a stronger claim. In some respects, he shares Simpson's idea of humanity as an unfinished and negotiable project. Nevertheless, in his view the standpoint of modernity with its procedures of rational communication is not contingent, but results from a directional process whose internal developmental logic can be objectively reconstructed. For Habermas, the stages of development of humanity across history point to universal patterns which can be described in terms of a sequence of stages of problem solutions. Consequently, since these patterns emerge from structurally reconstructed learning processes, they enable us to make non-arbitrary evaluations of the intellectual and moral progress of the human species up to now.

Simpson seeks to cut a middle ground between Habermas's call for humanity to take up enlightened and critical thinking as a legitimate legacy of modernity and Gadamer's caveat about the hermeneutic conditionedness of the human situation. He suggests that a 'proper admixture of repetition and critique' (Simpson 1995, 174) should guide us in our ethical deliberations about the extent to which technological rationalisation should be allowed to develop. If Habermas undertakes a critique of technological rationality on the ground that it tends to colonise the dimension of the lifeworld and replace practical questions with technical ones, Simpson attempts to mitigate the innovative import of the critical exercise by vindicating the integrity of the panoply of meaningful practices handed down from tradition. In other terms, whereas Habermas emphasizes the necessity to protect noncoercive argumentative discourse from the assault of purposive instrumental rationality and its technological aide, Simpson embarks on the mole-like task of digging underneath the conversational surface of human action so as to discover resources of meaning or structures of significance from which it becomes possible to extrapolate norms which could impose some constraints upon the expansion of technological rationality. The norms that he purports to uncover, therefore, are not transcendently deduced or metaphysically hypostatized but are disembodied from the very substance of our meaningful practices in which they are always already entrenched. If they are occluded or have become inconspicuous, it is because, under the hegemony of technological rationality, they are increasingly marginalised. Hence, to bring them from the margins into the centre, from the periphery into the focus of our intersubjective dialogue is what needs to be done in order to carry out a philosophical and critical assessment of technology.

Both Habermas and Simpson agree on the notion of humanity as a conversationally negotiated project, both agree that boundaries for technological expansion should be consensually agreed through a process of discursive will formation. However, contrary to Habermas, Simpson wants to provide guidelines for the direction of our intersubjective conversations and the deliberations of our power of judgement. And, in his view, the temporality of repetition with its demands for 'meaningfulness, self-recognition, and the representation of general interests' (1995, 174) constitutes the criterial principle from whose standpoint to conduct the exercise of critique. He suggests that, whenever questions arise about the extent to which technological rationality should be allowed to encroach upon social practices, those questions should be made to 'converge upon such questions as: *what level of instrumentalization and of technological rationalization is necessary or consistent, under existing though contestable conditions of natural or quasi natural adversity and scarcity, with socially emancipated life meaningfully lived?*' (1995, 174). If, Simpson concludes, we orient our debate about technological progress according to the standards implicit in the formulation of this question, then a rational space is cleared for critique to uncover all those 'sources of domination and distortion' (1995, 175) which impinge upon the integrity of human life.

There is a limit in Habermas's theoretical framework that descends directly from the formal nature of his theory: it provides no substantive contents for the normative orientations arising from the process of rational communication. Transposed onto the ethical level, his theory cannot prevent the possibility of 'meaningless emancipation' (Benhabib 1986, 329). Paradoxically, it cannot restrain rational individuals from achieving widespread consensus over the substitution, for example, of the time consuming practice of the family dinner for the microwaved, fast-food meal regardless of whether Habermas is committed to considering such a change as a diversion from the path of an emancipated life. What his theory points to is the removal of domination and the establishment of conditions of free communication as they are inherent goals of the process of intersubjective understanding. But progress 'at the formal level of development of human cognition' does not amount to progress at 'the semantic level of the meaning structures of a given culture' (Benhabib 1986, 268). Simpson seeks to overcome this deficiency by implementing Habermas's theoretical framework with a normative content drawn from Gadamer's hermeneutic of repetition. By doing so, however, he undermines a great deal of the utopian potential still contained in Habermas's critical theory. In fact, his resumption of

effective historical consciousness, that is, of a consciousness wherein the horizon of expectation is fused together with the horizon of the past brought forward by a continuous happening of tradition, does not leave space for radical changes in history.¹ To be sure, Habermas too is reluctant to encourage messianic hopes, but he maintains that critical social theory should not retract from the promise of a better world and a future transformation.

In order to retrieve the 'utopian', though not messianic, content of critical theory, it is necessary to uncover a fundamental assumption on technological rationality implied by both Habermas's and Simpson's frameworks. On the basis of this I propose to reconceptualise technology's function in modern industrial society in a way which makes it possible to see technology as one of the main vehicles of human liberation. I will embark on this task in the next section.

'No concept is more abstract than the idea of a mere machine': an interpretation of Marcuse's critical theory of technology

Simpson's search for ethical boundaries to be imposed on the development of technological rationality is based upon a Habermasian conception of the world as divided into two spheres of action: (1) purposive instrumental action, including the sub-systems of the economy and the bureaucratic state apparatus, in which social actions are co-ordinated through the functional interdependencies of their unintended consequences; and (2) communicative action in which intersubjective actions are harmonised through the medium of language in such a way as to produce mutual understanding. According to this scheme, the domain of technology is confined to the sphere of purposive rational action and technical practices are shaped in a form which does not allow instances of communication to take place through their medium. Technology, in its basic logical structure, remains for Habermas tied to strategic action aimed at bringing natural objects and events under human control.

In this section, I argue that Habermas's attitude towards technology is fundamentally mistaken. By using Marcuse's one-dimensionality theory of post-industrial civilisation and Feenberg's critical theory of technology, I will show that the categories of instrumentalisation and purposiveness do not grasp the entire range of attributes and functions that technology contains and serves.

The nature of technology is variable and defies any essentialist treatment of the sort that Habermas devises by casting all aspects of it into

the category of instrumentalism. Technology is a social phenomenon and in its very structure and design reflects all social contradictions. The codes within which it is enrolled incorporate the dominant values and interests of society. But technology contains also crevices which can be manoeuvred by the dominated to bend it to different purposes. As such, technology is an 'ambivalent process suspended between different possibilities' (Feenberg 1991, 14).

The underlying rationale of my argument is that the Enlightenment project of human liberation cannot be achieved without the essential contribution of technology. To the extent that civilisation arises from the human need to confront and transform nature, there is no possibility of making sense of such ideals as freedom, justice, equality and humanity outside a technological rational civilisation. If this is the case, then Simpson's attempt to define ethical boundaries for the development of technology fails not just because it is always difficult to draw limits on the expansion of technological practices, but because his notion of the meaningful is construed in irreconcilable antagonism with the technical. My query is: is there any other way of restoring meaning in the disenchanted world of modernity than by artificially manipulating it from outside? In other terms, under conditions of 'loss of meaning', can meaning ever arise for us again without submitting ourselves to the Nietzschean therapy of forgetfulness? Paradoxically, as Feenberg contends, every project designed to protect contexts of meaning from technical mediation ends up reproducing the same instrumental paradigm against which it purports to intervene: if we choose to leave something untouched by technology, is that not a subtler kind of technical determination, have I not domesticated a wild tree or bush if I plant around it in such a way as to bring out its beauty? (This is a standard technique of Japanese gardening.) If I suddenly need meaning in my overly technologised life and obtain it by returning to my family's religious traditions, am I not *using* tradition as a kind of supertechnology? If so, how can I believe in it? How can I ever leave the technical sphere if the very act of bounding a reservation instrumentalises it? (Feenberg 1991, 10)

In order to support my claim in favour of the existence of a liberating potential in technology, I will draw upon Marcuse's critical theory of post-industrial civilisation. At first sight, it might appear as a bizarre choice for my advocacy of the capacity of technology to bring about qualitative changes in society to make recourse to a thinker who is known to be the bearer of strong critical claims against technological civilisation. In *One-Dimensional Man*, Marcuse launches a fierce attack

not just against the use to which technology is put today, but against technology and technological reason *as such*. He rejects the notion of the neutrality of technology – that is, the idea that technology is indifferent to the variety of purposes it is bent to serve – and states that in the advanced industrial society technology has become an ideology. From his line of argument, it emerges that the technological universe represents the moment of synthesis of the historical project of subjugation of man and nature. Hence, as a part of a system of domination, technological rationalisation takes on political connotations which, according to him, are inscribed deep down ‘in the concept and construction of techniques’ (cf. Marcuse 1964, xvi).

Yet, from this radical critique of technology, Marcuse, like Adorno and Horkheimer before him, is not led to call for a romantic and irrationalist return to a pre-technological form of life. He maintains that technology, despite its ideological character, is still the most effective means available for man to be released from toil and misery, satisfy his needs and develop his intellectual faculties. As a result, he argues that the technological reality of domination of nature, exploitation of human resources and social authoritarianism can be transcended only by completing the technological project:

If the completion of the technological project involves a break with the prevailing technological rationality, the break in turn depends on the continued existence of the technical base itself. For it is this base which has rendered possible the satisfaction of needs and the reduction of toil – it remains the very base of all forms of human freedom. The qualitative change rather lies in the reconstruction of this base – that is, in its development with a view of different ends.²

Now, on the basis of this claim, how is it possible to reconcile the view that technological rationality is in its own logic politically and ideologically biased towards domination with the utopian idea of transcending the technological reality of domination into a higher, humanised technological world? Whether Marcuse succeeds in resolving this dilemma is still an open question in the philosophical literature.³ Nevertheless, no one can deny Marcuse’s intent to articulate the promise of a disalienated technological civilisation by moving from the Heideggerean position that technological rationality is *a priori* biased towards domination. Since I take this attempt seriously, I want to follow Marcuse’s line of reasoning up to its ultimate consequences so as to assess its viability for my purposes of human liberation.

From the passage quoted above, it seems that Marcuse envisages the possibility of reconstructing existing technology and making it serve new ends in the context of a radical transformation of society. For such a possibility to be actualised, however, a conception of the neutrality of technology must be maintained at some level. In fact, the technical resources can unleash their liberating potential only if there is in their structure an essentially neutral core which can be abstracted from the substantive values they incorporate in their concrete historical applications. However, were such a core to be found, the contradiction between the affirmation that technology is *a priori* value-laden and the faith in the possibility of conferring a new direction upon technological progress would simply be shifted onto a different ground. Marcuse would in fact be facing the dilemma of holding two incompatible positions: the position that technology is biased towards domination and the position that it is neutral and value-free. Now, Feenberg claims that 'neutrality and bias can and do in fact coexist and that Marcuse's theory rests on the possibility of their coexistence' (Feenberg 1991, 230). He distinguishes between two kinds of bias: substantive and formal bias. Substantive bias occurs when different standards are applied to individuals who ought to be treated equally. Formal bias arises instead when individuals are judged by the same standards but in a context in which some benefit from the apparent fairness of the procedural arrangements and others are disadvantaged.

Feenberg argues that Marcuse's critique of technological rationality implies the assumption that technology is formally biased. In his view, Marcuse recognizes the fundamental neutrality, if not of technology, of the technological elements out of which technologies are built up. These elements such as the hammer, the lever, or the electric circuit are in themselves indifferent to the ends they are contingently made to serve in particular social and cultural settings. 'They are', Feenberg says, 'like the vocabulary of a language: they can be strung together to form a variety of "sentences" with different meanings and intentions' (Pippin *et al.* 1988, 233). The bias arises precisely when these elements are combined and arranged in a concrete form. Therefore, if we define technologies as 'developed ensembles of technical elements', Feenberg continues, it can be stated that 'they are greater than the sum of their parts'. They meet social criteria of purposes in the very selection and arrangement of the intrinsically neutral elements from which they are built. These social purposes can be understood as 'embodied' in the technology and not simply as an extrinsic use to which a 'neutral tool might be put' (Pippin *et al.* 1988, 233).

Following Feenberg's interpretation, it is possible to draw the conclusion that, according to Marcuse, the neutrality of technology can be preserved to the extent that contextual considerations are not taken into account. In a decontextualised, abstract analysis the illusion arises that technology is value-free. But, in fact, this analysis confounds the neutral status of the technical elements with the value-laden substance of the technological combinations. The strategy of Marcuse is, therefore, to bring into consideration the larger, concrete social context within which the formally neutral technical materials are arranged and imagine new ways of combining them according to a different system of values.

Yet, there is a more radical thesis that Marcuse puts forward in *One-Dimensional Man*. It asserts that even the formally neutral elements from which technologies are built up are intrinsically biased because they are penetrated by the values embodying scientific-technical knowledge. The consequences of this thesis are devastating for his purposes of transcending the actual technological reality into a humanised one, for it shifts the object of critique from technology to technical reason. The implication is that scientific-technical reason emerges to be biased towards domination. In other terms, Marcuse comes as far as to claim that there is something intrinsic to formally neutral systems that bends them in the direction of distorted, repressive applications.

Marcuse's demonstration of the formal bias of technical reason and, more generally, of abstract thinking is based upon his dialectical ontology as well as a Hegelian understanding of the categories of 'abstract' and 'concrete', 'universal' and 'particular', 'concept' and 'idea'. He points out that formal thinking tends artificially to isolate the object from the whole to which it properly belongs, thus suppressing the practical and dialectical mediation through which the potentialities of the object are uncovered. In so doing, formal thinking loses the essential connection of the object to its context and realizes a truth which refers exclusively to an abstract universe of fixed and frozen concepts 'available for manipulation from without' (Pippin *et al.* 1988, 247). But as soon as these conceptual constructions are reintegrated to the concrete, historical totality, the formal bias emerges. In fact, as a result of the suppression of the possibilities of a higher, progressive development immanently present in the object, the latter is adapted to what merely is. Hence, the theoretical propositions stemming from the abstractive process, though neutral in that 'they do not prescribe the ends of the object they construct conceptually', are not neutral 'with respect to the alternative of actual and potential in [their] objects'. Given that they

have done away with the dialectical concept of potentiality, they are 'clearly biased towards the actual' (Pippin *et al.* 1988, 246–7).

There is no such a thing, for Marcuse, as the object of immediate experience abstracted from the conceptual process through which it is grasped. Rather, the truth of the object lies in its concept, whereby it is put in relation with the historical totality and made recognizable as that which it really is. What the object really is is not exhausted by what it actually is, but includes the potentialities to which it points by virtue of an inner tension. As a matter of fact, then, the object tends to deny what it immediately is and transcend itself 'towards its reality' (Marcuse 1964, 105–6).

Insofar as formal thinking ignores the dynamic and dialectical content of our conceptual experience, its operational procedures assume a political function (Marcuse 1964, 107). To emphasize this point, Marcuse brings up the case of a study into labour relations in an American company in the 1950s conducted by social researchers. This case is illuminating of the discriminatory social outcome that empiricist methodology generates when applied to social theory. Here is Marcuse's account of the results of the study:

In investigating the workers' complaints about working conditions and wages, the researchers hit upon the fact that most of the complaints were formulated in statements which contained 'vague, indefinite terms', lacked the 'objective reference' to 'standards which are generally accepted', and had characteristics 'essentially different from the properties generally associated with common facts'. In other words, the complaints were formulated in such general statements as 'the washrooms are unsanitary', 'the job is dangerous', 'rates are too low'.

Guided by the principle of operational thinking, the researchers set out to translate or reformulate those statements in such a manner that their vague generality could be reduced to particular referents, terms designating the particular situation in which the complaints originated and thus picturing 'accurately the conditions in the company'. For example, the statement 'the washrooms are unsanitary' was translated into 'on such and such occasion I went into this washroom, and the washbowl had some dirt in it.' Inquiries then ascertained that this was 'largely due to the carelessness of some employees'. A campaign against throwing papers, spitting on the floor, and similar practices was instituted, and an attendant was assigned to constant duty in the washrooms. It was in this

way that many of the complaints were reinterpreted and used to effect improvements (Marcuse 1964, 109).

What is wrong with this study? Marcuse's reply is that, insofar as this kind of operational thinking contributes to alleviating human suffering, it fulfils a progressive function in the material and intellectual advance of society. Yet, he underlines, it 'also testifies to the ambivalent rationality of progress' (Marcuse 1964, 114). The aim of the study is, after all, to assuage the discontent of the workers by making it something tractable in functional and operational terms. But, as a result of the manipulative act of translation carried out by the researchers, the meaning and content of the original universal propositions of the workers are significantly transformed. Whereas the untranslated statements express a universal state of affairs by relating the particular conditions of the workers to the larger social and political context outside the workplace, in the translation the link between the particular and the whole is cut off. As a consequence, the discontent of the workers appears as a matter of personal, contingent distress to be treated through the functional measures devised by sociology and psychology, while the general mood of unhappiness pervading the whole of society gets lost.

In this light, which set of propositions captures and recognizes better the reality of the workers for what it truly is? The 'vague, indefinite, universal' propositions of the workers or their operational translations? Paradoxically, what appears to be a concrete, detailed and meticulous description of the *facts*, Marcuse observes, 'is the result of a series of abstractions from [their] *real concreteness*, which is in the universal character of the case' (Marcuse 1964, 110).

From this ontological critique of the instrumental nature of scientific and technical reason, Marcuse derives some speculative and utopian consequences. However, as long as his attack against the process of formal abstraction with its bias towards domination implies a radical reform of both science and technique, his positive suggestions must be rejected. Towards the end of *One-Dimensional Man*, he suggests that science and technology should constitute themselves as 'political enterprise', thus propounding a political intervention into the evolution of scientific-technological rationality (Marcuse 1964, 233). This suggestion, however, fails to recognize that science is intrinsically impermeable to external interference. Certainly, no one can rule out the possibility that scientific rationality develop a new methodology shrinking from abstract formalism, but, were such a development to occur, it would proceed from within science itself. What the political power can do instead is to radically transform the social environment so

that new questions arise which may induce scientists to alter their categories of understanding of the world and, possibly, devise new theories (Pippin *et al.* 1988, 250–1).

Nevertheless, the theoretical impossibility of prefiguring an alternative science does not preclude the possibility *hic et nunc* to develop a new technology. In this respect, Marcuse's suggestions can be far more fruitful. Taking for granted his critique of formal rationality, the erection of an alternative technology incorporating human values in its very structure requires the recovery of a dialectical conception of reality. To the extent that current technical practices fulfil the task of serving the most vital human needs, a new technology that wants to be liberating and emancipatory must assign to itself the additional task of serving other, higher human needs, namely, the need for freedom, justice, equality, happiness and beauty. There is nothing deceptively utopian in this requirement. As Feenberg explains, 'Marcuse's theory contains the means to construct a solution which avoids the excesses of both utopian technophobia and uncritical acceptance of given technology as a fate. Recall that the essential flaw in scientific-technical rationality, by which it is bound to biased application, lies in its reified decontextualisation of the objects it constructs. Thus it should be possible to at least advance toward a new technology by multiplying the contexts and technical systems that interact in any given application to take into account more and more of the essential features of the object. The initial steps in this direction are obvious and concern the integration of ecological, medical, aesthetic and work-democratic considerations into the existing technologies to begin the movement toward a better society. Thus just as technical practice now incorporates the requirements of domination in its basic structure, in a free society it would instead incorporate the requirements of 'peace and freedom' (Pippin *et al.* 1988, 253).

The incorporation of a plurality of contexts of human needs into the structure and design of technical machines opens the way to what Feenberg calls in a Hegelian fashion the 'concretization of technology'. Through the realization of its integrative potential, technology is made to interact with a wide range of interests and action systems. To recognize this dialectical dimension of technology does not require a commitment to some kind of Aristotelian teleology or a special access to the notion of true human needs and potentialities. In embracing Marcuse's dialectical framework to account for a technological transformation of the structure of society, I appeal to his concept of essence as a *historical category*. By 'essence' Marcuse refers to 'the totality of the historical process as it is organized in a historical epoch' (Marcuse 1968, 43–78). Essence is

something which has become, the result of a process in which actual facts are transcended towards their own potentialities. The possibilities inherent in a particular historical situation are determined by the measure of control of nature, the degree of development of the productive forces, and the level of emancipation of human needs – ‘the “free” needs for gratification and happiness, for the “good and beautiful”’ – from the elementary stage of the reproduction of life (Marcuse 1968, 720).

However, in order to grasp the historical tendencies operating within a particular mode of social organisation, Marcuse appeals to an account of the course of history as a whole. In his view, the projection of a historical goal embodying a more advanced form of social life must be made through a process of recollection of the past, that is by analysing all aspects of the present form of life in their interconnected unity and by showing them as resulting from an entire sequence of historical appearances. This anchoring of the essential potentialities of a given historical situation to the concrete conditions of life preserves the dialectical method from the abstractness of utopian idealism (Marcuse 1968, 73).

Technology, as a social and human enterprise, is inextricably linked to a variety of milieux. Marcuse shows that the way out of present technological reality is not to put boundaries on technical practices, but to recontextualise them into the ‘lifeworld’. This means to install into the very structure of machines a new technical code informed with human and natural potentialities. How the transition from the present reified technological world to a future reintegrated technology is to be achieved is a practical and political question. The intent of this study was to remove some conceptual and philosophical obstacles which seemed to be in the way of a critical theory of technology, and I think that Marcuse’s and Feenberg’s contributions demonstrate that this can be done without dumping reason, and scientific reason, into the dustbin of history.

Notes

1. On this point, see Habermas’s comments on Benjamin’s *Theses on the Philosophy of History*, in ‘Modernity’s Consciousness of Time and Its Need for Self-Reassurance’, in Habermas (1987, 1–22).
2. Cf. Marcuse (1964, 231). This passage is also quoted by Andrew Feenberg to whom I am indebted for my interpretation of Marcuse. See A. Feenberg, ‘The Bias of Technology’, in Pippin *et al.* (1988, 225–56, 227).
3. On Marcuse’s one-dimensionality thesis, an opposite interpretation to that given by Feenberg is offered, among others, by Claus Offe in ‘Technology and One-Dimensionality: A Version of the Technocracy Thesis?’, in Pippin *et al.* (1988, 215–25).

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9

Lean Production and Economic Evolution in Capitalism

Tony Smith

Social evolution is discussed on two different levels in Marx's writings. In *The German Ideology*, the Preface to *The Critique of Political Economy* and elsewhere, Marx attempted to account for the broad sweep of human history from the pre-class societies of the distant past to the post-class societies of the future. A second theoretical concern of Marx's was to grasp the direction of evolution in capitalism and the mechanisms underlying this evolution. These two areas of investigation are obviously connected; capitalism is a part of human history. Nonetheless, it is possible to consider historical developments in capitalism on their own terms, apart from their place in the grand scheme of human history. And it is possible to ask whether evolution in capitalism enables a transition to socialism without invoking transhistorical principles.

In the first section of this study I shall discuss Marx's theory of the mechanisms underlying evolution in capitalism and his attempt to reconstruct one main line of this evolution. In the second section the evolution from 'Fordist' mass production systems to 'lean production' will be presented. I shall then inquire whether this evolution furthers or hampers the objective and subjective preconditions for a transition to socialism.

Evolutionary mechanisms in capitalism

Much of Marx's theory of capitalism is formulated on the macro level of the total social capital. But Marx also considered various micromechanisms in capitalism, including many that have to do with economic evolution. On the level of total social capital Marx's theory of economic evolution can be formulated in terms of functional explanations, notably, 'capitalist relations of production are functional for the development of

the forces of production'. Evolutionary explanations on the level of micromechanisms, in contrast, refer to the anticipated and unanticipated consequences of intentional acts undertaken by social agents in a given institutional context.

In principle both types of explanations are legitimate and complementary, contrary to the view of both organicists and methodological individualists (see Levine *et al.* 1987). I shall concentrate here on the latter level. From this perspective evolution in capitalism results from innovation and the selection mechanism of the market, analogous to evolution through mutation and natural selection in biology. And as is the case in biological evolution, the evolutionary success of any given unit of capital is defined in terms of its continued reproduction in a given environment. Unlike the units of biological evolution, however, units of capital consciously anticipate the behaviour of other units competing for space in the same environmental niche. This means that changes in units of capital are not based solely on random mutations. They will occur in the context of consciously undertaken searches.

The continued survival of any given unit of industrial capital depends on its successfully completing two fundamental tasks. It must produce surplus value, and it must realize that surplus value. In Volume I of *Capital* Marx showed that the production of surplus value involves (i) the social dynamic of capital and wage labour and (ii) the degree of labour productivity allowed in principle by the given technologies and organisation of the labour process. Those who own or control any given unit of capital thus have an incentive to seek innovations allowing them to structure general labour relations in a manner favourable to their interests. They have as well an incentive to seek improvements in labour productivity. Of course, the labour process is a 'contested terrain'. Innovations in the labour process are no less contested; wage-labourers will often attempt to further their interests by redefining innovations in ways not intended by management. But as long as control of investment remains in the hands of capital struggles of this sort will predominantly be defensive in nature.

Even if we assume that a potential surplus value has been produced, this does not ensure the survival of the unit of capital in question. The output in question must be sold for any surplus value to be actually appropriated ('realized'). Successful sale is a function of the time it takes to get the commodity to market, its price relative to the prices of competing commodities and the general demand for the sort of commodity in question. And so the owners and controllers of capital have an incentive to seek innovations that lower the circulation time of capital,

a topic Marx explored in Volume II. They also have an incentive to seek process innovations that allow commodities to be produced more efficiently, so prices can be kept relatively low. And they have an incentive to seek product innovations that increase the likelihood that the commodities put up for sale will meet the wants and needs of potential buyers. Marx examined these last two themes in Volume III.

In an economy where the incentive to seek technological and organisational innovations in the above directions is so thoroughly embedded, a percentage of these searches is bound to produce results. In this manner we can explain the constant stream of 'mutations' occurring in the capitalist mode of production. After these mutations have taken place, the market then operates as a selection mechanism. Firms that introduce technological and organisational innovations that in fact further capital's control of the labour process, increase labour productivity, reduce circulation time, lower the costs of production and distribution, result in wants and needs being met in new ways, or result in the formation of new wants and needs among those with sufficient purchasing power, will tend to accumulate capital at a relatively faster rate. Consider, for instance, the impact of successful process innovations. Prices initially remain a function of average costs in the given sector, while the unit of capital that first introduces the innovation can produce the commodity in question at lower than average costs. When it sells the commodity at the market price it is thus able to win surplus profits. Units of capital that fail to undergo such mutations either accumulate capital at a slower rate, fail to grow, or suffer outright devaluation.

The positive incentive of sharing in these surplus profits provides other units of capital operating in the sector (or new units entering the sector) with a motive to imitate the innovations. So too does the fear of suffering the negative sanction of devaluation. The market then provides a variety of ways to undertake this imitation, including payments for permission to use innovations patented by another firm; the hiring of workers trained by the innovating firm; the hiring of labourers with the skills to reverse engineer technical innovations; and so on. Non-market mechanisms of diffusion can also be found alongside these sorts of market transactions, including informal communications among employees of different firms in the same sector, the activities of government agencies with a mandate to spread information regarding best practice techniques, the published papers of university professors undertaking research in relevant areas, and so on. A variety of results may occur besides outright failure to imitate and successful copying. An imitating firm may modify the initial innovation incrementally.

Or it may even stumble across a radically new procedure, allowing it to leap-frog over the initial innovator.

Evolution on both the intra- and inter-sectoral level crucially depends on the mobility of capital. This mobility is never complete. Transportation costs and communications costs set barriers. The skill levels of workers in the relevant labour pools may limit the ability of particular units of capital to imitate the practices of others. Cultural traditions established in a given region may also rule out the appropriation of innovations made elsewhere. The more capital mobility is hampered, the less powerful is the drive to win surplus profits and avoid devaluation. A last factor to consider is the level of market demand. If demand exceeds what the most efficient producers can produce, there is space for less efficient producers to survive. If the level of demand falls below that point, less efficient producers cannot reproduce themselves in the new environment.

The above considerations suggest that evolution in capitalist economies is a quite complex matter. There is no unilinear path down which all units of capital progress at an identical rate. Capitalism is characterised instead by combined and uneven development. At any given time innovative and growing enterprises, sectors and regions are combined with others that retain their niche in the economic environment while keeping to established patterns. Economic, geographical, political and cultural barriers to capital mobility can even result in the emergence and persistence of organisational structures lacking the capital/wage labour relation (peasant households, family farms, 'Mom and Pop' grocery stores, enterprises run out of garages and so on) alongside capitalist enterprises. When Marx insisted that he did not intend to present 'a general historico-philosophical theory' in *Capital* he was pointing out how the combined and uneven character of evolution in capitalism undermines any attempt to capture this evolution in a single sequence of stages (Marx 1977, 570–1).

Despite the tremendous contingencies and complexities of capitalist evolution, however, Marx did pick out one path for special consideration. Beginning with the putting-out system, where merchant capitalists contracted with artisan workshops to produce commodities, Marx described the evolution to early factories, where industrial capitalists and their agents could supervise the labour process directly. This period then gave way to the epoch of manufacturing, in which capitalists instituted detail labour as much as possible, fragmenting the labour process and assigning each part to a particular worker. Finally, the reduction of the labour process to a sequence of mechanical motions set the stage for the introduction of machines that could take over these motions, a stage

Marx termed 'machinofacture' or 'big industry'. Marx also argued that each step in the progression from the putting-out system to machinofacture brings us closer to the formation of a working class with the objective and subjective capacities to emancipate itself from capitalism. And so Marx's account of economic evolution in capitalism is inextricably coupled with his discussion of the potential for a transition to socialism.

I shall return to the question of socialism below. The question to be addressed in the present context is whether privileging one particular path of evolution in the history of capitalism can ever be justified in light of combined and uneven development. Marx's main theoretical concern in the parts of *Capital* under discussion was the direction in which capitalism was developing. His main practical concern was the political trajectory of wage-labourers in the leading capitalist countries. Given these concerns, the historical progression from the putting-out system to machinofacture can be defended on a number of grounds:

- Each of the organisational and technological forms introduced in Marx's progression captures essential features of the hegemonic economic phenomena of its period. Each stage in the above evolutionary path arose in the sphere where the dynamism of industrial capitalism was the most pronounced, where surplus profits were highest and where attempts to displace the costs of devaluation onto others were most successful. These structures were also of most relevance to future historical development in capitalism; they defined 'best practice' cases that other units of capital in the period were compelled to imitate.
- These types also capture essential features of the hegemonic political and cultural forms in the periods in question. State policy disproportionately took the interests of these units of capital into account and the most significant legitimations of the capitalist system at the time were formulated with these units in mind.
- These structures were the places where capital experimented most with new strategies for controlling labour and where labour organisations first strove to develop counter-tactics.

In my view these sorts of considerations more than justify Marx's decision to pick out one line of evolution in capitalism for special consideration. This need not be misleading as long as it is remembered that in other theoretical and practical contexts a different ordering might well be appropriate and as long as it is remembered that capitalist evolution is always characterised by combined and uneven development.

From 'Fordism' to lean production

Many attempts have been made to up-date the line of evolution developed by Marx in *Capital*. The term 'Fordism' has been used to refer to the form of capitalism hegemonic in certain sectors and regions in the mid-twentieth century. This ideal type is a synthesis of various features, including:

1. a labour process organised around assembly lines in which each worker was assigned a specific task to be performed repeatedly;
2. an extensive system of formal job classifications and work rules premissed upon a relatively strict separation of mental and manual labour;
3. a vast expansion of indirect labour, including a bureaucratic apparatus of supervisors and middle managers, quality control departments and so on;
4. the stockpiling of extensive inventories at each stage of the production and distribution process 'just in case' problems arose threatening to disrupt production and distribution;
5. the mass production of standardised goods and services;
6. a 'hands-off' relationships between assembly firms and their suppliers;
7. mass consumption markets.

It can be questioned whether these features are sufficient to justify the assertion that Fordism counts as a distinct stage in the evolution of capitalism. Mass production and mass consumer markets arose in the nineteenth century, well before Henry Ford started operating in Michigan (Best 1990; Fine and Leopold 1990; McKendrick *et al.* 1982; see also Glick and Brenner 1991). This issue need not be resolved here. For our purposes the more important point is whether the major restructuring occurring in capitalism today counts as the introduction of a new stage in the evolution of capitalism. The authors of an influential study of the global automobile industry, *The Machine That Changed the World: The Story of Lean Production*, believe that this is the case. They hold that the lean production system is in the process of proving its superiority to Fordist mass production (and to craft production) in the global market:

[I]n the end we believe lean production will supplant both mass production and the remaining outposts of craft production in all areas of industrial endeavor to become the standard global production system of the twenty-first century. (Womack *et al.* 1990, 278)

I shall assume for the sake of the argument here that this claim is broadly accurate. It is worth noting that two authors extremely hostile to Womack and his associates echo them on this one point: '[A]lmost every industry is trying to implement some form of lean production' (Parker and Slaughter 1994). This is not to say that the spread of lean production will be even. Certain sectors and regions will be restructured more and at a faster rate than others. Nor is it to deny that there are a great many continuities between Fordism and lean production, just as there were countless continuities between manufacturing and machinofacturing.

There is not space to examine all of the variations of lean production that have appeared or that could appear. Instead I shall take as a provisional starting point a set of seven 'stylised facts' extrapolated from the business press and the mainstream social science literature on lean production. This set is parallel to that introduced in the above discussion of Fordism.

1. The fragmentation and atomisation of detail labour appears to have reached its limit point in Fordism. Further growth appears to require a reintegration of the labour process and a greater stress on social co-operation in the workplace ('the team concept') (Aoki 1988).
2. The attempt to impose as strict a separation as possible between manual labour and mental labour has also reached a limit point. In the long-term the greatest productivity advances have been shown to come from incremental changes in the production process. (Dertouzos *et al.* 1991) In order to undertake these incremental changes successfully the insights and creativity of the labour force must be mobilised. This is termed *kaizen*, or 'continuous improvement' (Imai 1986). Also relevant here is the fact that lean production employs highly complex technology systems. When a number of complex production systems are combined, the result is a system of such hypercomplexity that it is impossible for engineers to foresee all the results that may occur. Under these circumstances it is inevitable that emergencies will arise. If workers have been vigilant, curious and committed, and if they have developed the requisite high level of skill, there is a better chance they will be able to respond to these emergencies successfully. Otherwise, catastrophes may well occur. The owners and controllers of capital have a clear incentive to develop a skilled and committed workforce that can avoid such catastrophes (Hirschhorn 1984).
3. The costs of indirect labour, that is, labour that does not add value to the final product, reached a limit point in Fordism. This includes supervisory labour, quality control, maintenance work, cleaning and

- so on. These positions can be eliminated if the operator on the shop floor and in the office becomes a multi-skilled labourer capable of self-direction, as opposed to the detail labourer of past epochs of capitalism. The multi-skilled worker incorporates quality concerns, machine maintenance and cleaning assignments into the labour process (Koike 1988).
4. The costs associated with inventories built-up 'just in case' they were needed reached a limit point too. In lean production inventories are kept low. Each step in the production and distribution process completes its task on an as needed basis, that is, 'just-in-time' for the results to be used by the next stage in the process. Final assembly is completed only when an order comes in; partially finished goods are produced only when needed for final assembly; suppliers deliver parts and raw materials to the plant only when needed for production.
 5. In Fordism fixed constant capital was invested in single-purpose machines, that is, machines capable of producing a single sort of output. The owners and controllers of capital naturally wished to receive as great a return as possible from their investment, and so they were predisposed to extend product runs of standardised products as long as possible. Also, the unit costs of moving to a new sort of output were quite high initially, since the machines that had been operating would have to be ripped out and replaced. With the introduction of general-purpose machines (computer numerically controlled machine tools, robots, desktop computers and so on) this is no longer the case. Assuming the labour force is sufficiently flexible, the introduction of a new sort of output can now be done with a relatively small effect on unit costs, simply through reprogramming the machines. And so a tendency arises for there to be shorter runs of more diverse products. While scale and volume have hardly become irrelevant, in lean production the greatest profits are won from tailoring goods or services to the specific needs of particular customers in a way that cannot be easily duplicated by others.
 6. In lean production the relations between assembly firms and their suppliers and distributors cannot be of the 'hands-off' variety characteristic of Fordism. The just-in-time system demands that suppliers, assemblers and distributors must share information and technologies among themselves. This sharing also allows 'concurrent engineering', in which the design of parts made by suppliers is undertaken alongside the design of the final product by the assembly firm. As a result of these closer relations, more and more aspects of production and distribution can be 'outsourced' without the overall process of production and distribution breaking down.

7. In lean production the consumer is integrated in the production process in a qualitatively new way, captured in the term 'mass customisation' (Davidow and Malone 1992, 5). Information technologies allow narrow niches in consumer markets to be defined. Flexible technologies and labour processes allow producers to run diverse product lines simultaneously in an attempt to address these niches. Information technologies then allow producers to monitor closely shifts in consumer demands. Product cycles are kept short so they can react rapidly to any shifts.

If we assume that lean production qualifies as a qualitatively new period in the evolutionary path described by Marx, two questions arise at once. Does the transition to lean production corroborate or falsify the Marxian account of economic evolution in capitalism? And what does the rise of this new stage in capitalist evolution suggest regarding the objective and subjective conditions for a transition to socialism? The remainder of the present section will be devoted to the former question.

Due to a series of historical contingencies, the leading firms in post-war Japan never completely embodied the Fordist paradigm. The lean production system first emerged as a result of various intended and unintended consequences brought about by occupying Americans, the Japanese state, the leading corporations in Japan and competing factions of the labour movement (Ichiyo 1988). The selection mechanisms of the market have since operated in a generally favourable fashion towards units of capital that have undergone this 'mutation', while units failing to take on the technological and organisational innovations of lean production have tended to falter (Best 1990). When we examine more closely the selection mechanisms at work, they turn out to be precisely those presented by Marx in his general account of the micromechanisms of economic evolution in capitalism.

As we have seen, for Marx firms tend to accumulate surplus profits if they introduce technological and organisational innovations that further capital's control of the labour process; increase labour productivity; reduce circulation time; lower the costs of production and distribution; result in wants and needs being met in new ways; or result in the formation of new wants and needs among those with sufficient purchasing power.

Other units of capital may survive in their niche without imitating these innovations. But there will be a tendency for units of capital in the most dynamic sectors of the economy to further the diffusion of these innovations or else face devaluation. The innovations of the lean production system are of the sort described.

- The transformation of the capital/wage labour relation in lean production increases the flexibility of management, a point that will be developed below. Disaggregating the production and distribution process through increased outsourcing has also been introduced in order to give units of capital greater control over the labour process relative to Fordism, where the consolidation of the 'mass collective worker' in huge factories and offices set limits on capital's room for manoeuvre (Murray 1983).
- Teams of multi-skilled workers have proven to lead to higher levels of labour productivity, both directly and through the elimination of workers who do not add value to the final product.
- The just-in-time system is designed to make each stage in the production and distribution process respond rapidly to the demands of the succeeding stage, thereby reducing circulation time. All innovations designed to reduce 'slack' and make production and distribution 'lean' are also clearly designed to reduce circulation time. So too are general purpose machines such as robots, computer-controlled machine tools, and automatic guided vehicles; they all speed up the process of transforming raw materials to finished products. The drive to shorten product cycles through concurrent engineering is another feature of lean production reducing circulation time. The disaggregation of production through outsourcing speeds circulation time as well. If all the stages of production and distribution are undertaken by a single vertically integrated company, a considerable amount of its capital will be tied up over an extended period prior to final sale. With subcontracting arrangements, spin-offs, spin-ins, joint ventures, and so on, the different stages of the production and distribution process are assigned to different units of capital, each of which proceeds through its own circuit at a much faster rate than capital invested in the vertically integrated firms of Fordism.
- One central intent of the just-in-time production system is to reduce to a minimum the amount of raw materials and partially completed parts shipped by suppliers. This is matched by the commitment to reduce buffers in the production process and to co-ordinate relations with distributors in order to minimise stocks of unsold inventories. Another goal is to reduce waste as much as possible in the production process. All these measures lower the costs of production and distribution.
- The technologies and organisational innovations of lean production allow a greater range of products to be offered to consumers. Lean production also incorporates a variety of information technologies enabling firms to track consumer behaviour in great detail, noting

sudden shifts in demand. Product runs tend to be of shorter duration, as producers react to this information more quickly.

In the light of these considerations, we may conclude that the rise of lean production fully confirms the Marxian theory of the micromechanisms of economic evolution in capitalism. In the next section the evolutionary potential of socialism will be considered in the light of these recent developments.

Lean production and the conditions for a transition to socialism

In biology evolutionary accounts are retrospective, as are uses of evolutionary explanations in mainstream social science. In contrast, consideration of possible future evolutionary paths is an intrinsic component of Marxian theory. In specific, a variety of objective and subjective preconditions for a transition from capitalism to socialism have been explored by Marxists. How ought we to assess the possibility of such a transition in the light of the rise of lean production?

There are two objective conditions of the possibility for a transition to socialism to be considered here. The first is a significantly high level of labour productivity. While there is no consensus among Marxists regarding the exact shape socialist institutions should take, there is a general consensus that socialism involves a much higher level of participation in decision-making in workplaces and communities than that found in capitalism. This participation demands fairly extensive leisure time, which in turn requires high levels of labour productivity throughout the economy. A second objective condition is that capitalism not attain a state where it can reproduce itself stably for an indefinite period. If such an evolutionary equilibrium point were to be attained the prospects for socialism would be dim indeed.

There are a number of subjective conditions that must be met for a transition to socialism to be possible as well. First, no such transition can occur if the innermost dispositions of social agents are themselves formed entirely in ways that enable the reproduction of the capitalist social order. Second, even if truly oppositional impulses were to arise, social agents must be motivated to act on them with a view to replacing capitalism. Third, a class of social agents must be formed in capitalism that has the capacity to organise society itself, a capacity slaves and serfs in previous modes of production were not able to develop. Fourth, even if all of the above conditions were met, a successful transition would

not occur unless sufficient numbers of these social agents united in organisations capable of implementing successful strategies and tactics.

There is no need to spend much time establishing that the first objective condition of the possibility for a transition to socialism is furthered by the evolution from Fordism to lean production. As Kenney and Florida suggest by terming lean production 'innovation mediated production', lean production institutes a series of organisational transformations designed to increase the rate of technical change. These include attempts to appropriate the insights of the labour force, a closer integration of science and economic activity, concurrent engineering (which speeds the diffusion of innovations within a network of enterprises), and so on. All of these factors increase labour productivity. So too does the innovation in information technology most closely associated with lean production, the shift from mainframe ('host-based') computing to 'distributed' or 'networked' computing, where computing power is dispersed throughout the organisation (Tapscott and Caston 1993, 53).

The second objective precondition for a transition to socialism is that capitalism not attain an evolutionary equilibrium point where it can reproduce itself smoothly over an indefinite period. It is impossible for such a point to be reached in lean production. In lean production the drive to appropriate surplus profits and the fear of socially wasted investment do not disappear. This drive and this fear necessarily tend to lead individual firms to make decisions to expand production in the hope of capturing greater market share. However rational these decisions may be from the standpoint of the individual firm, in the aggregate a tendency to overproduction crises results, here as in all other variants of capitalism. And in lean production, as in all other forms of capitalism, the only ultimate solution to overproduction is devaluation, with all its accompanying social disruptions.

If anything, capitalism may become more unstable in the epoch of lean production. The rate of innovation increases in this system, and the faster the rate of innovation, the greater the danger that previous investments will be devalued. In lean production competitive battles are increasing in intensity, there is less and less margin for error, there are fewer and fewer guarantees that success in one round of innovation will continue in the following ones. The result is a system that does not reproduce itself stably over time. Reproduction of the total social capital occurs in a social context where more and more aspects of social life are disrupted by attempts to displace the costs of devaluation onto others.

We come next to the subjective conditions for a transition to socialism. Is capitalism evolving in a manner that makes it likely these conditions

will be fulfilled? The first and most basic subjective precondition is that a class of social agents be able to develop a disposition to consider such a transition favourably. Adorno feared that economic evolution in the twentieth century has made it unlikely that this precondition will be fulfilled. In his view the innermost dispositions of social agents have been thoroughly colonised by commodification, shaped to fit the imperatives of capital accumulation even when they take on an apparently oppositional hue. Here lies the source of Adorno's vaunted pessimism:

That all cultural products, even non-conformist ones, have been incorporated into the distribution-mechanisms of large-scale capita, that in the most developed country a product that does not bear the imprimatur of mass-production can scarcely reach a reader, viewer, listener at all, denies deviationary longings their subject matter in advance.... The subjective precondition of opposition, uncoordinated judgement, is dying out, while its gesticulations continue to be performed as a group ritual. (Adorno 1974, 207)

If this incorporation were complete, there would simply be no 'space' within which a transition to socialism could ever begin.

We cannot assess lean production from this perspective without first discussing mass customisation in a bit more detail. Mass customisation begins when information technologies allow enterprises to distinguish various market niches with great accuracy. In principle, they allow the limit point of a 'segment of one' to be identified, that is, product features desired by an individual consumer (Winger and Edelman 1990). Computer aided manufacturing and a flexible workforce then allow products to be manufactured that are customised to the tastes of these narrow market segments. According to the defenders of lean production, mass customisation thereby connects enterprises and consumers in a long-term relationship:

The goal...is to maximize the binding energy between themselves and their customers. This is done by maximizing customer satisfaction and by enlisting the customer into a co-destiny relation. (Davidow and Malone 1992, 222; see also Davis 1987; Hapoieniu 1990; McDonough 1988)

The consumer invests money in the purchase of a commodity. He or she also takes the time required to learn about the company's product line and to provide feedback to the firm. In return, he or she receives

up-to-date information regarding products and their use, along with a higher level of service, the opportunity to affect future product development, special discounts and so on. In this manner the consumer develops a stake in the company's future. This is a long-term commitment; it may take years for an enterprise to build a service infrastructure. But when it does, lean production enterprises can enjoy customer loyalty through a series of product generations.

What the defenders of lean production do not note is that the use of information technology to track consumer behaviour instantaneously and continuously involves an objectification of the consumers' subjectivity and self-understanding. Once this information has been objectified, it can then be appropriated by manufacturers and distributors and used against the consumers who were its source; the more one knows about you, the more open to manipulation you are. For instance, messages addressed to an anonymous mass are less effective than those of 'micromarketing', directed to you personally.

The closer integration of consumer and capital in lean production is reinforced by attempts to raise the rate of consumption. The drive to reduce socially necessary consumption time is just as much a part of capital as the drive to lower socially necessary labour time. For the circuit of capital accumulation to proceed smoothly, it is not enough that purchases be made within a given time period. The objects purchased must be consumed within a given period as well, so that the consumer can return to the market ready to make the next round of purchases. Everything else being equal, a briefer period of consumption allows capital to pass through its circuit quicker and so more capital can be accumulated in a given period. Lean production, with its shorter product cycles, updates, design changes and so on, clearly encourages the lowering of consumption time.

One result is that the general tendency to define yourself in terms of consumption activity is strengthened; you are what you buy. Various commodities take on symbolic value; consumers proclaim who they are by purchasing commodities from one market segment rather than another. This shaping of subjective identity by capital is furthered by the psychic assaults of advertising. Over a period of three years, ad expenditures in the US jumped from \$61 billion in 1981 to over \$130 billion (Rank 1994). Americans are now exposed to 3,000 marketing messages a day. By the time of high school graduation the average 18-year-old has witnessed 350,000 commercials (Matsu 1994).

We must conclude that in lean production the consumer and his or her desires have been integrated into the circuit of capital far more

effectively than was ever the case in Adorno's lifetime. Yet we should not be too quick to embrace Adorno's pessimism and assume that the first subjective condition for a transition to socialism has been eliminated in the course of economic evolution. Internal tensions remain within mass customisation. For one thing, even when a commodity has been designed with an individual consumer or relatively narrow range of consumers in mind, there can still be a gap between the consumer and that product. This gap arises whenever purchases made by an individual economic agent lead to results that go against collective interests with which that consumer identifies. Suppose a given set of consumers wishes to avoid environmental damages and the superexploitation of labourers. In capitalist markets the prices of consumer goods generally do not reflect these practices, and the information on these matters that is available is often unreliable, inconsistent and requires a considerable amount of time to sort out. In these circumstances, consumers who wish to limit environmental degradation and the superexploitation of labour often find themselves making purchases that help bring about precisely the situations which they wish to avoid. It makes sense here to say that the consumer is alienated from the commodity he or she has purchased, even if he or she has participated in the customisation of that commodity. The emergence of this sense of alienation in the lived experience of consumption can break the spell of consumerism.

Second, mass customisation comes into play only when social agents have sufficient income to make consumer purchases. The lean production model does not ensure that all agents will be in this position; just the contrary. Harrison has argued that lean production involves a general trend for 'core' firms to downsize and outsource jobs to smaller firms on their 'ring', where wages are lower, benefits are fewer and employment is more insecure (Harrison 1994). Levels of involuntary unemployment thus tend to increase significantly with lean production (Aronowitz and DiFazio 1994; Rifkin 1995). And Harley Shaiken has documented that in key sectors of the economy lean production offers capital a third option besides the high wage/high productivity and low wage/low productivity alternative of Fordism, the low wage/high productivity option (Shaiken 1990). All of this implies that in lean production attempts to integrate consumers within the capitalist order will break down for many of those whose consumption power rests upon wages, whatever the allures of mass customisation.

Even if these two points are granted, they only concern the fulfilment of the first subjective precondition for a transition to socialism. Sufficient numbers of social agents must be motivated to act on a disposition to

consider alternatives to capitalism if such a transition is ever to occur. Are there features of lean production that strongly suggest that this second precondition is likely to be met in the medium-to-long term? One relevant point has already been mentioned, the tendency for there to be a rise in involuntary unemployment (including involuntary part-time employment) under lean production. The *de facto* job security of the labour force as a whole may well decline, even if certain limited categories of workers benefit from job guarantees. If so, it is surely plausible to hold that increasing numbers of workers will be willing to consider alternatives to capitalism at some point.

We must also recall that in lean production the owners and controllers of capital retain the ultimate power to shut down plants and invest elsewhere, a power that permeates and distorts the nooks and crannies of everyday life. As long as this power is an integral part of the lived experience of workers, the motivation to consider alternatives to capitalism can be expected to arise.

The same conclusion holds when we turn to the labour process. It is beyond dispute that lean production helps to increase the amount of labour performed. The goal of 'lean' production by definition is to produce more with less, one measure of which is the increase of economic output per unit of labour power purchased. This increase is accomplished by eliminating the 'pores' in the working day. In traditional Fordist automobile plants, workers actively labour 45 seconds each minute. In the typical lean production auto plant, workers are engaged in productive activity around 57 seconds a minute. If we assume a ten second a minute differential applied to a plant of 2,000 workers, 2,667 extra work hours are performed over the course of an eight hour shift as a result of this speed-up and 13,335 extra work hours are added over a five day week. This is equivalent to hiring an extra 333 workers to work a 40 hour week (Fucini and Fucini 1990, 37). Or, to put it another way, this is equivalent to each worker performing the equivalent of more than one extra day's labour every five-day week (Fucini and Fucini 1990, 148).

Even the strongest defenders of lean production grant that it involves hyperintensive work and increased worker stress. These are not unintended by-products of lean production; the entire point of just-in-time production is to eliminate any excess that can be made lean, including an 'excess' of time for workers to relax. These advocates insist, however, that the process of continuous improvement presents never-ending challenges that mobilise workers' intelligence and creativity. This, they believe, fully compensates for any increase in stress (Adler 1995; Womack *et al.* 1990, 101). If this were the case, there would be no reason

to expect that increased work stress will eventually motivate social agents to contemplate alternatives to capitalism. There are, however, two major difficulties with this argument. First, what evidence substantiates its conclusion? Production workers on Toyota's assembly lines in Japan are reported to make 20 motions every 18 seconds, or a total of 20,600 motions in a working day. This pace leads to a level of stress that erodes both physical and psychological health. In the extreme case it can lead to *karoshi*, 'sudden death from overwork'. Where is the proof that the challenges faced by the workforce are sufficiently high to compensate for this level of suffering and risk?

Second, is this the sort of issue that business writers and management consultants are capable of adjudicating even in principle? Surely those who have experienced both the stress and the challenges of the lean production workplace are in a much better position to weigh the extent to which the latter compensates for the former. They are the only ones with the necessary experience to know exactly how the trade-offs here ought to be made. From the workers' perspective, perhaps it would be better to exchange a smaller number of chances to exercise creativity, in return for a lower level of stress. A work process designed to evoke the same degree of creativity in a less stressful environment would be better yet. The lean production model rules out the workforce making these sorts of evaluations. The managers of lean production firms have consistently emphasized that the 57-second-a-minute pace is not a subject for negotiation (Fucini and Fucini 1990, 217). Academic defenders of lean production have not criticized them for this intransigence. And so the most crucial aspect of the labour process is not decided by the group that bears the consequences of the decision. It is instead imposed upon them. Once again, so long as this is the case it seems plausible to expect that a motivation to seek alternatives will eventually arise in the workforce.

Along with the question how much labour is performed, there is the issue of how it is performed. It would be easy to conclude from the rhetoric of teamwork, multi-skilling, and worker empowerment that lean production leaves it up to the members of the workforce to decide how production should be structured from day-to-day. This is not at all the case. Teams and rotation are used in lean production systems as part of management's agenda to significantly reduce work rules, job classifications and the importance of the seniority system. All of these developments expand the scope of management power. Employees in management's disfavour can be transferred to the most arduous jobs in the plant until they are forced to quit. The elimination of classifications and the security system also makes it impossible for workers to transfer

to less physically and psychologically demanding jobs as they get older. Lastly, the lean production model is structured so as to subject individual workers to considerable peer pressure. With no slack in the labour process, a worker who is absent places an immediate and obvious burden on his or her co-workers. This dynamic creates a great amount of peer pressure to not miss work and to submit to the established work pace, even when a worker is ill, or should be at home taking care of a sick family member.

The lean production model includes the private ownership of enterprises, a management appointed by representatives of those private owners, an economic system that makes accumulation of capital the ultimate goal of economic activity, and a management that retains the ultimate power to dictate the strategies to be employed in the pursuit of that goal. Any attempt to mobilise greater participation by the labour force is carefully structured so as to not call any of these parameters into question. For all the talk of worker participation in the team model, for all the homilies in praise of blurring the lines between management and labour, a chasm remains between the decisions in which workers participate and the decisions management retains as its prerogative. In short, the promise of 'worker empowerment' in lean production in principle simply cannot be kept. Sooner or later workers will ask what social transformations would have to occur for this promise to become a reality. As soon as this question is raised the second subjective precondition for a transition to socialism is met.

Fulfilling the promises of lean production would require a thorough-going democratisation of the workplace and community life. This brings us to a third subjective condition for a transition to socialism. A class of social agents must be formed under capitalism having the capacity to meet the challenges of economic and community democracy, that is, the capacity to institutionalise socialism. Does lean production hamper or further the development of this capacity? Here I shall discuss only one aspect of this complex issue. Does lean production lead to a general deskilling of the working class? The more one holds that the members of the labour force have been thoroughly deskilled, the less plausible it is to assert that they have developed the ability to organise production and distribution in a post-capitalist society (Adler 1990).

Before taking up this issue some definitional matters must be considered. The notion of 'deskilling' obviously cannot be defined independently from the notion of 'skill'. Braverman and other defenders of the deskilling thesis employ a notion of skill derived from the craft model of production. In a craft context workers become skilled through years of

labour, resulting in experiential knowledge of the production process that both managers and beginning workers lack. Such embodied knowledge grants a form of power on the shop floor, a power manifested in the ability to control the sequence of operations they perform and the pace at which they work. Given this definition of skill, a plausible case can be made that the transition from handicrafts to manufacturing resulted in widespread deskilling. And given this definition a case can be made that technologies associated with lean production facilities extend deskilling even further. With computer numerically controlled tools, for instance, the knowledge of how to use the tool is objectified in the program running the machine. This program dictates both the sequence of operations to perform and the pace to which the machinist must conform.

Is it possible to define skill in a different manner? Paul Adler has proposed an alternative conception that goes beyond tacit or embodied knowledge. For Adler, labour is more skilled if it involves more training, higher levels of responsibility, more abstract tasks and goals, and greater functional interdependence (Adler 1988, 2). He argues that this definition accounts better for our shared intuitions regarding the sorts of jobs that are skilled. Airline pilots or surgeons must follow established procedures in every detail. Having little job autonomy, they do not seem to meet the criteria of the Bravermanian definition of skill. And yet the training time and responsibility connected with these occupations are such that most people (correctly) consider pilots and surgeons to be highly skilled. Similarly, manufacturing and office jobs that appear deskilled when measured in terms of the craft model may have to be evaluated quite differently with this more nuanced concept of skill.

Zuboff makes the same sort of point in her analysis of information technologies in the workplace. She acknowledges that computerising the workplace tends to devalue the embodied, tacit, skills of the labourer, a process she terms 'automating'. But information technologies also allow 'informating', a quite different process. Information technologies generate data bases in which complex and extended relationships in the workplace are represented in symbolic form. Informating occurs when operators are granted access to these data bases. They can then develop various skills to replace the now obsolete embodied skills, including:

- the ability to comprehend the referent of abstract data
- the ability to interpret this data within a conceptual framework, an elaborated language (Zuboff 1988, 192)

- the ability to form inductions and deductions from the given data, and the ability to put those inductions and deductions into practice through operations on the abstract representations of material processes
- the ability to revise those inductions and deductions based on feedback from data bases modified by those operations.

Zuboff summarises,

The operator must first think about what has to be done. Second, he or she must know how data elements (abstract cues) correspond to actual processes and their systematic relations. Third, the operator must have a conception of the information system itself, in order to know how actions taken at the information interface can result in appropriate outcomes. Fourth, having decided what to do and executed that command, he or she must scan new data and check for results. Each of these processes folds back upon a kind of thinking that can stand independent from the physical context. (1988, 73)

In this manner the workplace becomes more transparent to the worker, as the manipulations of abstract symbols allows an understanding of and control over remote relations in the production and distribution process (Kenney and Florida 1993, 15; Zuboff 1988, 386).

Defenders of the deskilling thesis rely on a traditional notion of skill based on the practices of craft labour. Both Adler and Zuboff have shown that quite different definitions of skill are possible. In principle, new sorts of skills could arise with lean production that more than compensate for any loss of craft skills. There have been a number of studies investigating whether or not there is a secular trend for the skills of the working class as a whole to be lowered with the introduction of the technologies and organisational forms of lean production. The consensus view is that the empirical evidence does *not* substantiate the existence of such a trend. Kenney and Florida, for instance, claim that '(w)orkers take on the role of super-technicians who monitor, review data, and adjust and control the process. These super-technicians have skill levels that are equivalent to electrical engineers of two decades ago' (Kenney and Florida 1993, 304; see also Adler 1987, 1988; Adler and Borys 1989; Best 1990; Greenbaum 1995).

The idea that lean production will inaugurate a 'new covenant' between labour and capital establishing 'relations of equality' within a 'posthierarchical' learning environment (Zuboff 1988, 309, 394, 401), is

a sham (Smith 1994a,b). But this does not imply that talk of the rise of 'the knowledge worker' is necessarily a sham as well. If we accept the reconceptualisation of the notion of skill and the assessment of the empirical evidence introduced above, then the third subjective precondition of the possibility for a transition to socialism has been furthered by economic evolution within capitalism. The ability of the working class to organise social production and distribution itself is expanding, not declining, in the course of economic evolution in capitalism.

This brings us to the fourth subjective condition for a transition to socialism, the formation of organisational structures, alternative media, alternative cultural practices, leadership bodies, strategies, tactics and all the other factors that make it concretely possible to carry through a transition to a post-capitalist society. In the absence of such factors any motivation that might be present to struggle for social transformations will quickly dissipate in a variety of different directions. Some will engage in isolated acts of rebellion or posturing, others will wallow in cynicism, yet others will attempt to make the most favourable accommodation with capitalism possible. And there will be those who allow their frustrations to be redirected from the economic system to members of different genders, ethnic groups and nationalities. If these sorts of paths are taken, it ultimately does not matter how much the development of technology in principle allows a society of greater leisure and participation, how often socio-economic crises break out, how motivated wide groups of social agents might be to consider alternatives to capitalism, or how capable these groups might be of establishing an humane alternative.

With this issue we have reached the limits of the present study. The mechanisms of economic evolution in capitalism certainly do not ensure the fulfilment of this final condition; no socialist today can confidently proclaim that the 'iron laws of history' make the coming of socialism inevitable. But neither do these evolutionary mechanisms rule out the possibility of this condition being fulfilled. One thing can be said with certainty: any claim that we have reached the end of social evolution is surely ludicrous, given the internal tensions of lean production, the latest stage in the economic evolution of capitalism.

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